

WHO REPORT 2003

Global Tuberculosis Control

SURVEILLANCE, PLANNING, FINANCING



COMMUNICABLE DISEASES
WORLD HEALTH ORGANIZATION
GENEVA

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Cover: map of estimated incidence rate of TB (per 100 000 population). No colour indicates < 25 cases/100 000; pale blue indicates 25 to 99 cases/100 000; dark blue indicates 100 or more cases/100 000. A more detailed map can be found in Annex 5, page 207.

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List of abbreviations

4-FDC	4-drug fixed-dose combination	ESP	Essential services package	MDR-TB	Multidrug-resistant tuberculosis
ADB	Asian Development Bank	EU	European Union	Merlin	Medical Emergency Relief International
AFB	Acid-fast bacilli	EUR	WHO European Region	MoH	Ministry of Health
AFR	WHO African Region	EURO	WHO Regional Office for Europe	MoJ	Ministry of Justice
AFRO	WHO Regional Office for Africa	FDB	Fondation Damien Belgique	MoPH	Ministry of Public Health
AIDS	Acquired Immunodeficiency Syndrome	FEFO	First expiry, first out	MoU	Memorandum of Understanding
ALM	American Leprosy Mission	FHI	Family Health International	MPA	Minimum Package of Activities
ALTI	Aide au Lépreux et Tuberculeux de l'Ituri	FILHA	Finnish Lung and Health Association	MPH	Master of Public Health
AMR	WHO Region of the Americas	GDEP	Global DOTS Expansion Plan	MSF	Médecins Sans Frontières
AMRO	WHO Regional Office for the Americas	GDF	Global Drug Facility	NASCOP	National AIDS/STDs Control Programme
ARV	Antiretroviral treatment	GFATM	Global Fund to Fight AIDS, TB and Malaria	NGO	Non-governmental organization
AusAID	Australian Agency for International Development	GHS	General Health Services	NHC	National Health Committee
BRAC	Bangladesh Rural Advancement Committee	GLRA	German Leprosy Relief Association	NHLA	Norwegian Heart and Lung Association
CDC	Centers for Disease Control and Prevention, USA	GMS	German Medical Service	NICC	National Interagency Coordinating Committee
CDR	Case detection rate (i.e. smear-positive case detection rate, whole country)	GOJ	Government of Japan	NLHA	National Lung Health Association
CDS	Contract Distribution System	GTZ	Gesellschaft für Technische Zusammenarbeit (German development agency)	NLR	Netherlands Leprosy Relief
CENAT	Centre National Anti-Tuberculeux	HBC	High-burden country of which there are 22 that account for approximately 80% of all new TB cases arising each year	NPO	National programme officer
CESAL	Centro de Estudios de Solidariedad con l'America Latina	HIV	Human immunodeficiency virus	NPS	National Prevalence Survey
CHC	Community Health Centre	HLWG	High Level Working Group	NTBLCP	National TB and Leprosy Control Programme
CIDA	Canadian International Development Agency	HPSP	Health and Population Sector Programme	NTCP	National TB Control Programme
COMBI	Communication for Behavioural Impact	HSDP	Health Sector Development Programme	NTLP	National Tuberculosis and Leprosy Programme
CRL	Central reference laboratory	HSR	Health Sector Reform	NTP	National Tuberculosis Control Programme
CTRI	Central Tuberculosis Research Institute	ICD	Italian Cooperation for Development	NWFP	North-West Frontier Province (Pakistan)
DANIDA	Danish International Development Agency	IEC	Information, Education, Communication	OPAS	Organização Pan-Americana da Sadde (PAHO)
DARE	District AIDS and Reproductive Health Project (Kenya)	IEDC	Infectious and Endemic Disease Control Project (China)	OSI	Open Society Institute (Soros)
DDR	DOTS detection rate (i.e. smear-positive case detection rate under DOTS)	IFRC	International Federation of Red Cross and Red Crescent Societies	PAHO	Pan-American Health Organization
DFB	Damien Foundation Belgium	IPT	Isoniazid preventive therapy	PHC	Primary Health Care
DFID	UK Department for International Development	IUATLD	International Union Against Tuberculosis and Lung Disease	PHILCAT	Philippines Coalition against TB
DOT	Directly observed treatment	JATA	Japan Anti-Tuberculosis Association	PHRI	Public Health Research Institute
DOTS	The internationally recommended control strategy for TB	JFAP	Japan Foundation for AIDS Prevention	PIH	Partners in Health
DRS	Drug Resistance Survey	JICA	Japan International Cooperation Agency	PPM	Public-Private Mix
DTBE	Division of TB Elimination (CDC)	JSI	John Snow, Inc.	QA	Quality Assurance
EMR	WHO Eastern Mediterranean Region	KfW	Kreditanstalt für Wiederaufbau	RIPP	Russian Institute for Phthysiopulmonology
EMRO	WHO Regional Office for the Eastern Mediterranean	KIL TB	Kings and Imperial College of London, TB consortium	RIT	Research Institute for Tuberculosis (Japan)
EPOS	EPOS Health Consultants	KNCV	Royal Netherlands Tuberculosis Association	RNTCP	Revised National TB Control Programme
		LGA	Local Government Areas	SANTA	South African National TB Association
		MCNV	Medical Committee Netherlands-Vietnam	SAPP II	Social Action Programme, Project II (Pakistan)

SCC	Standardized short-course chemotherapy	STI	Sexually transmitted infection	UNDP	United Nations Development Programme
SDTC	State TB Training and Demonstration Centre	TADSA	TB Alliance DOTS Support Association	USAID	United States Agency for International Development
SEAR	WHO South-East Asia Region	TB	Tuberculosis	WB	World Bank
SEARO	WHO Regional Office for South-East Asia	TBL	Tuberculosis and Leprosy	WFP	World Food Programme
SIDA	Swedish International Development Agency	TLCP	Tuberculosis and Leprosy Control Programme	WPR	WHO Western Pacific Region
SPC	Secretariat of the Pacific Community	TLMI	The Leprosy Mission International	WPRO	WHO Regional Office for the Western Pacific
		UNAIDS	Joint United Nations Programme on HIV/AIDS		

Summary

Background and aims

1. This is the 7th WHO annual report on global TB control. It includes data on case notifications and treatment outcomes from all national control programmes that have reported to WHO, together with an analysis of plans, finances, and constraints on DOTS expansion for 22 high-burden countries (HBCs). Eight consecutive years of data are now available to assess progress towards the 2005 global targets for case detection (70%) and treatment success (85%).

Methods

2. During 2002, a standard form for reporting surveillance data was sent to 210 countries via WHO regional offices. The form requests information about policy and practice in TB control, the number and types of TB cases notified in 2001, and the outcomes of treatment and retreatment for smear-positive cases registered in 2000.
3. National programme managers in the 22 HBCs were asked to identify the major constraints to DOTS expansion, and to present plans to overcome these constraints as they move towards target case detection and cure rates.
4. A new standard form for financial monitoring of TB control programmes was sent to the 22 HBCs during 2002. The form requests information on NTP budgets, available funding and funding sources, and general health infrastructure resources used for TB control.

Main findings

5. The global incidence rate of TB is growing at approximately 0.4%/year, but much faster in sub-Saharan Africa and in countries of the former Soviet Union.

6. The number of countries implementing the DOTS strategy increased by seven during 2001, bringing the total to 155 (out of 210). By the end of year 2001, 61% of the world's population lived in parts of countries providing DOTS. DOTS programmes notified 2.4 million new TB cases, of which 1.2 million were smear-positive. Over 10 million patients have been diagnosed and treated in DOTS programmes since 1995.
7. However, the 1.2 million smear-positive cases notified by DOTS programmes in 2001 represent only 32% of the estimated incidence, and the rate of progress in case finding between 2000 and 2001 was not significantly faster than the average since 1995, a mean annual increment of 137 000 cases. Globally, DOTS programmes would have to treat an extra 360 000 smear-positive patients each year to reach 70% case detection by the end of 2005.
8. Two thirds (67%) of the additional smear-positive cases reported under DOTS in 2001 (as compared with 2000) were found in India alone. There were smaller but marked improvements in case detection in Myanmar, the Philippines and Thailand. Other HBCs made minor gains in case detection, though Pakistan and Brazil reported significant increases in the geographic coverage of DOTS.
9. As DOTS programmes have expanded geographically, the proportion of estimated cases found within DOTS areas has remained constant at 40–50%. Overall, DOTS programmes in the 22 HBCs are not increasing case detection towards the 70% target within designated DOTS areas.

10. Treatment success under DOTS for the 2000 cohort was 82% on average, and has moved closer to the 85% target as the patient population has grown in size. Treatment success was substantially below average in the African Region (72%).
11. Sixteen countries had reached targets for case detection and cure by the end of 2001, but Viet Nam was the only HBC among them.
12. Twenty of the 22 HBCs are known to have adequate plans for DOTS expansion; implementation of many of these plans began in 2001 or 2002, and will be scaled up only in 2003.
13. The constraints on DOTS expansion most commonly identified were: lack of qualified staff; insufficient preparation for decentralization; non-compliance of the private sector with DOTS; inadequate health infrastructure; and weak political commitment.
14. A total of US\$ 211 million in new funding for NTPs was committed during 2002, to cover the five-year planning period 2001–2005. This reduces the total funding gap anticipated by NTPs for this period to only US\$ 0.2 billion. However, there may be an additional shortfall of at least US\$ 0.9 billion due to deficiencies in staff and infrastructure.
15. For 2003, the total budget requirement specifically for TB control in the 22 HBCs is US\$ 481 million, of which US\$ 52 million (11%) is not yet available. The anticipated funding gap for 2003 is lower than that reported for 2002.

Conclusions

16. If the current rate of DOTS expansion is maintained, the 70% detection target will not be reached by

2005. If that target is ever to be reached, DOTS programmes must improve case finding within designated DOTS areas, and must expand to new areas. To reach the 85% target for treatment success, cure rates must be improved under DOTS in some countries, especially those in sub-Saharan Africa.

17. Although funding for TB programmes, and planning for DOTS expansion, both improved during 2002, deficiencies in staff and health infrastructure are likely to hinder progress towards both of the global targets. At present, NTPs are significantly underestimating the cost of rectifying these deficiencies.

STOP PRESS

On January 31st, as this report was going to press, the GFATM announced the approval of 27 applications for funding for TB control (with no or minor adjustments or clarifications), for a total of US\$ 122 million over 2 years.

Applications from the following HBCs were approved:

Afghanistan (for TB, AIDS, and malaria), Cambodia, DR Congo, India, Kenya, Myanmar, Mozambique, Nigeria, Pakistan, the Philippines, and Uganda.

Except in the case of the Philippines (where more funding is required), acceptance of the above proposals will close or significantly reduce the estimated funding gap for TB control in 2003 in these HBCs.

Résumé

Introduction et objectifs

1. Ce rapport est le septième rapport annuel de l'OMS sur la lutte antituberculeuse dans le monde. Il contient des informations concernant le nombre de cas notifiés et les résultats du traitement en provenance de tous les programmes nationaux de lutte qui ont envoyé des rapports à l'OMS, ainsi qu'une analyse des plans, du financement et des contraintes à l'extension de la stratégie DOTS pour les 22 pays fortement touchés. On dispose désormais de huit années consécutives de données pour évaluer les progrès accomplis vers la réalisation des objectifs mondiaux pour 2005 concernant le dépistage des cas (70 %) et la réussite du traitement (85 %).

Méthodes

2. En 2002, un formulaire type pour la notification des données de surveillance a été envoyé à 210 pays par l'intermédiaire des bureaux régionaux de l'OMS. Le formulaire sollicite des informations sur la politique et l'organisation de la lutte antituberculeuse, le nombre et le type de cas de tuberculose notifiés en 2001 et les résultats du traitement ou du retraitement des cas à frottis positif enregistrés en 2000.
3. Les administrateurs de programmes nationaux des 22 pays fortement touchés ont été invités à recenser les principales contraintes à l'extension de la stratégie DOTS et à présenter des plans visant à les surmonter pour se rapprocher des taux cibles de dépistage des cas et de guérison.
4. Un nouveau formulaire type pour le suivi du financement des programmes de lutte antituberculeuse a été envoyé aux 22 pays concernés en

2002. Le formulaire sollicite des informations sur les budgets des programmes nationaux de lutte, les sources de financement et les crédits disponibles et sur les ressources générales des infrastructures de santé utilisées pour la lutte antituberculeuse.

Principales constatations

5. Le taux d'incidence mondiale de la tuberculose est en augmentation d'environ 0,4 % par an, mais est beaucoup plus rapide en Afrique subsaharienne et dans les pays de l'ex-Union soviétique.
6. Le nombre de pays appliquant la stratégie DOTS a augmenté de sept en 2001, portant le total des pays à 155 (sur 210). Fin 2001, 61 % de la population mondiale vivaient dans des régions de pays appliquant cette stratégie. Les programmes DOTS ont signalé 2,4 millions de nouveaux cas de tuberculose, dont 1,2 million à frottis positif. Plus de 10 millions de patients ont été diagnostiqués et traités dans le cadre de ces programmes depuis 1995.
7. Toutefois, les 1,2 million de cas à frottis positif notifiés dans le cadre des programmes DOTS en 2001 ne représentent que 32 % de l'incidence estimée, et le taux de progression du dépistage des cas entre 2000 et 2001 n'a pas augmenté sensiblement par rapport à la moyenne depuis 1995, soit une augmentation moyenne annuelle de 137 000 cas. Au niveau mondial, les programmes DOTS devront traiter 360 000 patients à frottis positif supplémentaires chaque année pour atteindre l'objectif de 70 % fixé pour le dépistage des cas d'ici fin 2005.

8. Les deux tiers (67 %) des nouveaux cas additionnels à frottis positif notifiés dans le cadre des programmes DOTS en 2001 (par rapport à 2000) concernaient uniquement l'Inde. Des améliorations plus modestes mais cependant sensibles du dépistage des cas ont été observées au Myanmar, aux Philippines et en Thaïlande. D'autres pays fortement touchés ont réalisé des progrès mineurs en matière de dépistage des cas, même si le Pakistan et le Brésil ont fait état d'augmentations significatives de la couverture géographique de la stratégie DOTS.
9. Les programmes DOTS ayant été étendus géographiquement, la proportion de cas estimés rencontrée dans les zones couvertes est restée constante, à 40–50 %. Dans l'ensemble, les programmes DOTS des 22 pays fortement touchés ne progressent pas sur le plan du dépistage des cas vers la cible de 70 % à l'intérieur des « zones DOTS ».
10. La réussite du traitement dans le cadre de la stratégie DOTS pour la cohorte 2000 s'est élevée à 82 % en moyenne et s'est rapprochée de la cible de 85 %, la population de malades ayant augmenté. La réussite du traitement est sensiblement en dessous de la moyenne dans la Région africaine (72 %).
11. Seize pays ont atteint les objectifs pour le dépistage des cas et la guérison fin 2001 mais le Viet Nam était le seul pays fortement touché parmi eux.
12. Vingt des 22 pays fortement touchés sont dotés de plans adéquats d'extension de la stratégie DOTS ; beaucoup de ces plans ont commencé à être mis en œuvre en 2001 ou 2002 et ne monteront en puissance qu'en 2003.

13. Les contraintes à l'extension du DOTS le plus fréquemment recensés sont les suivantes : absence de personnel qualifié ; préparation insuffisante de la décentralisation ; non-respect de la stratégie DOTS par le secteur privé ; infrastructure sanitaire inadéquate et faible engagement politique.
14. Un montant total de US\$ 211 millions de nouveaux crédits pour les programmes nationaux de lutte antituberculeuse a été engagé en 2002, pour couvrir la période quinquennale de planification 2001–2005. Ce montant permet de ramener le déficit de financement total prévu par ces programmes pendant cette période à seulement US\$ 200 millions. Toutefois, le manque de personnel et d'infra-

structures fait qu'il leur faudrait un montant supplémentaire d'au moins US\$ 900 millions.

15. Pour 2003, le budget total nécessaire à la lutte antituberculeuse dans les 22 pays fortement touchés s'élève à US\$ 481 millions, dont US\$ 52 millions (11 %) ne sont toujours pas disponibles. Toutefois, le déficit de financement prévu pour 2003 est moins important que celui dont il a été fait état pour 2002.

Conclusions

16. Si le rythme actuel d'extension de la stratégie DOTS se maintient, l'objectif de 70 % pour le taux de dépistage ne sera pas atteint en 2005. Pour atteindre cet objectif, les programmes DOTS doivent améliorer la recherche des cas dans les « zones

DOTS » et élargir leur action à de nouvelles zones. Pour atteindre l'objectif de 85 % de réussite du traitement, les taux de guérison doivent être améliorés dans le cadre de la stratégie DOTS dans certains pays, notamment en Afrique subsaharienne.

17. Bien que le financement des programmes de lutte antituberculeuse et les plans d'extension de la stratégie DOTS se soient améliorés en 2002, les insuffisances sur le plan tant du personnel que des infrastructures sanitaires compromettront les progrès sur la voie de la réalisation des objectifs mondiaux. A l'heure actuelle, les programmes nationaux de lutte sous-estiment largement ce qu'il en coûtera pour remédier à ces insuffisances.

Resumen

Antecedentes y objetivos

1. Este es el séptimo informe anual de la OMS sobre la lucha mundial contra la tuberculosis. En él se aportan datos de todos los programas nacionales de control que han informado a la OMS sobre los casos notificados y los resultados terapéuticos, así como un análisis de los planes, la financiación y los obstáculos a la expansión de la estrategia DOTS en 22 países con una alta carga de esa enfermedad. Actualmente se dispone de datos sobre ocho años consecutivos, que permiten evaluar los avances hacia las metas mundiales de 2005 de detección de casos (70%) y tratamiento satisfactorio (85%).

Métodos

2. En 2002 se envió a 210 países, por conducto de las oficinas regionales de la OMS, un formulario estándar para que consignaran los datos de vigilancia. En él se pedía información sobre la política y la práctica de la lucha contra la tuberculosis, el número y tipo de casos de tuberculosis notificados en 2001 y los resultados de los tratamientos y retratamientos de los casos con frotis positivo registrados en 2000.
3. Se pidió a los directores de los programas nacionales de los 22 países con alta carga que señalaran los principales obstáculos a la expansión de la estrategia DOTS y que presentaran planes para superarlos con miras a alcanzar los objetivos de detección de casos y de curación.
4. En 2002 se envió a los 22 países con alta carga de tuberculosis un nuevo formulario estándar de vigilancia de la financiación de los programas de lucha contra la tuberculosis. En el formulario se solicita

información sobre los presupuestos nacionales de los programas anti-tuberculosos, sobre los fondos disponibles y el origen de éstos, y sobre los recursos de la infraestructura general de salud empleados para combatir la tuberculosis.

Principales conclusiones

5. La incidencia mundial de tuberculosis aumenta aproximadamente un 0,4% al año, pero lo hace con mayor rapidez en el África subsahariana y en los países de la antigua Unión Soviética.
6. En 2001 han aplicado la estrategia DOTS siete países más, lo que totaliza 155 países (de 210). A finales de 2001, el 61% de la población mundial vivía en países que suministraban tratamiento DOTS. Los programas DOTS notificaron 2,4 millones de casos nuevos de tuberculosis, de los que 1,2 millones presentaban frotis positivo. Desde 1995 se diagnosticó y se trató a más de 10 millones de pacientes en los programas DOTS.
7. No obstante, los 1,2 millones de casos con frotis positivo notificados en 2001 en el marco de la estrategia DOTS representan únicamente el 32% de la incidencia estimada, y el ritmo de progresión en la detección de casos entre 2000 y 2001 no fue mucho mayor que la media observada desde 1995, con un incremento medio anual de 137 000 casos. En el ámbito mundial, los programas DOTS tendrían que tratar a 360 000 pacientes con frotis positivo adicionales al año para llegar a detectar el 70% de los casos a finales de 2005.
8. Dos tercios (67%) de los casos adicionales con frotis positivo notificados en el marco de la estrategia

DOTS en 2001 (en comparación con 2000) corresponden sólo a la India. En Myanmar, Filipinas y Tailandia las mejoras en la detección de casos fueron menores pero igualmente marcadas. Otros países con alta carga hicieron pocos progresos en la detección de casos, aunque el Pakistán y el Brasil notificaron aumentos significativos de la cobertura geográfica de la estrategia DOTS.

9. A medida que los programas DOTS se han extendido geográficamente, la proporción de los casos estimados detectados en las áreas DOTS se ha mantenido constante en el 40%–50%. En general, los programas DOTS de los 22 países que presentan una alta carga no están aproximando la detección de casos a la meta del 70% en las áreas designadas para aplicar DOTS.
10. El porcentaje de tratamientos satisfactorios bajo DOTS en la cohorte 2000 fue en promedio 82%, y a medida que ha ido creciendo la población de pacientes la cifra se ha aproximado a la meta del 85%. La eficacia terapéutica fue notablemente inferior a la media en la Región de África (72%).
11. A finales de 2001 un total de 16 países habían alcanzado las metas de detección y curación de casos, pero entre ellos el único con carga alta era Viet Nam.
12. Se sabe que 20 de los 22 países de más alta carga tienen planes adecuados de expansión de la estrategia DOTS; muchos de esos planes empezaron a aplicarse en 2001 o 2002 y sólo se intensificarán sensiblemente en 2003.
13. Los obstáculos más citados a la expansión de la estrategia DOTS son los siguientes: falta de personal

cualificado; preparación insuficiente para la descentralización; incumplimiento de DOTS por el sector privado; infraestructura de salud inadecuada; y falta de voluntad política.

14. En 2002 se asignó un total de US\$ 211 millones de nuevos fondos a los programas nacionales contra la tuberculosis, para cubrir el periodo de planificación quinquenal 2001–2005. Con ello el déficit de financiación previsto por esos programas para el periodo mencionado se reduce a sólo US\$ 200 millones. Sin embargo hay también un déficit adicional de al menos US\$ 900 millones, debido a que el personal y las infraestructuras son insuficientes.

15. Para 2003, las necesidades presupuestarias totales específicas de la lucha contra la tuberculosis en los 22 países con alta carga ascienden a US\$ 481 millones, de los que aún faltan US\$ 52 millones (11%). No obstante, el déficit de financiación previsto para 2003 es menor que el notificado para 2002.

Conclusiones

16. De mantenerse el ritmo actual de expansión de la estrategia DOTS, el objetivo de detectar el 70% de los casos no se habrá alcanzado en 2005. Si se desea alcanzarlo, los programas DOTS deben mejorar la localización de casos en las áreas designadas para aplicar la estrategia y deben extenderse a nuevas

áreas. Para cumplir el objetivo de tratar satisfactoriamente el 85% de los casos será necesario que algunos países, especialmente los del África subsahariana, mejoren las tasas de curación logradas mediante el tratamiento DOTS.

17. Si bien en 2002 mejoraron tanto la financiación de los programas antituberculosos como la planificación de la expansión de DOTS, las deficiencias existentes en materia de personal e infraestructura sanitaria retrasarán el avance hacia los objetivos mundiales. Actualmente los programas nacionales contra la tuberculosis están subestimando considerablemente lo que costaría remediar esas deficiencias.

Introduction

The goal of this annual report is to chart progress in TB control and, in particular, progress in implementing the DOTS strategy.¹ The targets for global TB control ratified by the World Health Assembly are: (1) to treat successfully 85% of detected smear-positive TB cases, and (2) to detect 70% of all such cases. Since these targets were not reached by the end of year 2000 as originally planned, the target year has been reset to 2005.²

Monitoring and evaluation are carried out through WHO's Global TB Monitoring and Surveillance Project, in close collaboration with the DOTS Expansion Working Group of the Stop TB Partnership. The main conclusions of the 2002 report³ were:

- 80% of the smear-positive patients recruited by DOTS programmes were successfully treated;
- Between 1999 and 2000, global TB

control continued along the steady but slow path traced since 1994. If that rate of progress is maintained, the target of 70% DOTS detection rate will not be reached until 2013;

- 2001 was a year for the preparation of plans and identification of funding gaps; the emphasis in 2002 would be on implementing the plans for DOTS expansion;

- Funds permitting, the biggest advances during 2002 were expected in Cambodia, China, India, Myanmar, Pakistan, the Philippines, and Uganda.

This seventh annual report provides an update of progress in TB control for most WHO member states. It presents data available by 15 January 2003 on case notifications for 2001, treatment results for patients registered in 2000, and the status of DOTS implementation by the end of 2001. This information is

supplemented, where possible, with the latest data on progress made by countries during 2002. We compared the new figures with those in previous reports (data from 1994 onwards), paying special attention to progress in the 22 HBCs.

Whether TB control programmes will be able to reach the 2005 targets depends on how well they can identify the major constraints to effective TB control, and on how effectively they can develop and implement plans and set budgets to overcome these constraints. To assist this process, we once again asked NTP managers in the 22 HBCs to identify the principal constraints, and to provide and discuss their plans and budgets for DOTS expansion.⁴ The budgets presented here for 2003 are the first results obtained from a new system of financial monitoring developed in 2002.

¹ World Health Organization. WHO Tuberculosis Programme: Framework for Effective Tuberculosis Control. Geneva: WHO 1994. WHO/TB/94.179. World Health Organization. *An Expanded Framework for Effective Tuberculosis Control*. Geneva: WHO 2002. WHO/CDS/TB/2002.297

² World Health Organization. Fifty-third World Health Assembly. Stop Tuberculosis Initiative, Report by the Director General. A53/5, 5 May 2000.

³ World Health Organization. Global Tuberculosis Control: Surveillance, Planning, Financing. WHO Report 2002. WHO/CDS/TB/2002.295. See <http://www.who.int/gtb/publications/globrep02/index.html>.

⁴ This updates some information in: World Health Organization. Global DOTS Expansion Plan. Geneva: WHO 2001. WHO/CDS/STB/2001.11.

Methods

Progress in global TB control Collection of routine monitoring data

Every year, WHO requests data from TB control programmes (or relevant public health authorities) in 210 countries and territories via a standard data collection form (Annex 1). The data form is distributed and collected via local WHO offices, data are reviewed at all levels of WHO, and inconsistencies are discussed with the respondents.

The form is a means of gathering data from countries with a range of TB incidence rates and varied systems for TB surveillance and monitoring. It closely follows procedures recommended by WHO for TB monitoring at national level. The most important of these procedures are:

1. Information is included on national policies and strategies vis-à-vis DOTS, the internationally recommended method for TB control; the form also asks for the percent of each country's population living in the catchment areas of health services that follow the DOTS strategy. The present report has data for each country in 2001.
2. TB cases (notifications, for 2001 in the present report) are defined by TB treatment history, site of disease, and the results of sputum smear microscopy.⁵
3. Numbers of each type of TB case are reported by TB control strategy (DOTS versus non-DOTS). Cases are assigned to the strategy that applies generally to the administrative area from which they were reported, not

to any specific clinical approach (e.g. observed treatment versus non-observed treatment) applied on a case-by-case basis. Thus, all patients diagnosed and treated in a DOTS area should be reported as DOTS patients.

4. Age and sex distribution are reported for smear-positive cases only.
5. Outcomes of treatment are for new smear-positive cases, and for smear-positive retreatment cases. Assessment of treatment outcomes always lags one year behind notifications. This is because outcomes are assessed by cohort – a group of patients having a common registration period – and a one-year lag ensures that the cohort's last-enrolled patient has finished treatment. This report has data for patients registered in 2000.
6. Treatment outcomes in the DOTS framework are the outcomes for an anonymous cohort of patients on a standard treatment regimen of fixed duration. In this system, a course of treatment may be completed successfully, it may end in failure, or it may not be completed (see below). In any event, the outcomes given are not necessarily the final outcomes of treatment for a group of patients, e.g. failures may be registered for retreatment in another cohort. To track the outcomes for each patient requires a case-based system of registration, as is now being used, for example, in some European countries. Case-based monitoring provides a richer body of information than cohort monitoring, but carries a heavier price in data management.

Where countries do not follow the WHO-recommended procedures, we have highlighted the differences in notes following the regional summaries of

data in Annex 4. In the European region, the process of data collection is managed by Euro TB (a WHO collaborating centre for surveillance in Europe) jointly with the WHO regional office.⁶

Categorization of countries

From the responses as a whole (but particularly the section on policy), we accept or revise each country's own determination of its DOTS status. Countries are then further categorized qualitatively (or semi-quantitatively), using the definitions in Table 1. A country is considered to have adopted the DOTS strategy if, by the end of the rel-

TABLE 1 **Categorization of countries**

Category	Definition
0	Countries from which no report was received this year.
1	Countries not implementing the DOTS strategy and having an estimated incidence rate of 10 or more cases per 100 000 population.
2	Countries implementing the DOTS strategy in less than 10% of the total population (pilot phase).
3	Countries implementing the DOTS strategy in 10 to 90% of the total population (expansion phase).
4	Countries implementing the DOTS strategy in over 90% of the total population (routine implementation).
5	Countries not implementing the DOTS strategy but having an estimated incidence rate of less than 10 cases per 100 000 population (low incidence).

⁵ Culture is considered a useful enhancement to diagnosis, but not a substitute for microscopy.

⁶ In addition to the information requested on the global form (Annex 1), the WHO/EuroTB form asks for TB notifications by nationality, citizenship, age and sex, and notifications and treatment outcomes by sputum culture and smear examination.

TABLE 2 **Technical elements of the WHO TB control strategy (DOTS)***

<p>Microscopy • Case detection among symptomatic patients self-reporting to health services, using sputum smear microscopy.**</p>
<p>SCC/DOT • Standardized short-course chemotherapy using regimens of 6–8 months for at least all confirmed smear-positive cases. Good case management includes directly observed therapy (DOT) during the intensive phase for all new sputum positive cases, during the continuation phase of regimens containing rifampicin, and during the entirety of a retreatment regimen.***</p>
<p>Drug Supply • Establishment and maintenance of a system to supply all essential anti-tuberculosis drugs, and to ensure no interruption in their availability.</p>
<p>Recording and Reporting • Establishment and maintenance of a standardized recording and reporting system, allowing assessment of treatment results (see Table 5).</p>

* The DOTS strategy comprises five elements in all, including “political commitment”.

** Sputum culture can be used for diagnosis, but direct sputum smear microscopy should still be performed for all suspected cases.

*** In countries that have consistently documented high treatment success rates, directly observed therapy may be reserved for a subset of patients, as long as cohort analysis of treatment results is provided to document the outcome of all cases.

evant year (in this report, 31 December 2001), the policy and practice of TB control conformed with DOTS (Table 2) in at least part of the country, and if notifications and treatment outcomes were reported from DOTS areas. If a country claims that DOTS has been implemented during the reporting year (here 2001), it must provide case notifications from DOTS areas, but is not expected to provide treatment outcomes until the following year.

Reported DOTS population coverage is defined according to each Ministry of Health’s classification of the catchment areas of health facilities, and definitions vary from one country to another. Consequently, DOTS coverage is no more than an approximate measure of access. In measuring health indicators, there is invariably a trade-off between accuracy and effort: DOTS coverage generally overestimates access to DOTS, but has the virtue of being easy to measure.

This system of DOTS categorization and coverage provides a first impression of each country’s progress in TB control. However, WHO targets are expressed more stringently in terms of treatment success and the case detection rate. We make separate assessments of these targets in DOTS areas and in the country as a whole.

Case detection

As one indicator of each NTP’s ability to detect and identify smear-positive cases, we calculate the proportion of new sputum smear-positive cases out of all new pulmonary cases (expected value 65–80% in areas with a low prevalence of HIV infection).⁷

We also compare case notifications to estimated incidence. The estimated smear-positive case detection rate is defined as:

$$\text{case detection rate} = \frac{\text{annual new smear-positive notifications (country)}}{\text{estimated annual new smear-positive incidence (country)}}$$

where the value of the denominator comes from WHO’s estimates for each country (Annex 5).⁸ These estimates are derived from several sources of data using various methods. The methods and data vary from one country to another. The fraction of all incident smear-positive cases that are detected (diagnosed and potentially treated) by DOTS programmes is:

$$\text{DOTS detection rate} = \frac{\text{annual new smear-positive notifications (under DOTS)}}{\text{estimated annual new smear-positive incidence (country)}}$$

The case detection rate (CDR) and the DOTS detection rate (DDR) are identical when a country reports only from DOTS areas. This should happen only when DOTS coverage is 100%. The ratio of DDR to DOTS coverage is an estimate of the case detection rate within DOTS areas, which would ideally be 70% or greater as coverage increases.

Although these indices are termed “rates”, they are actually ratios. The number of case notifications is usually smaller than estimated incidence because of incomplete coverage by health services, under-diagnosis, or deficient recording and reporting. However, it is possible for the calculated detection rate to exceed 100% due to (1) intense case finding in an area that has a backlog of chronic cases, (2) over-reporting e.g. double-counting, (3) over-diagnosis, or (4) the under-estimation of incidence.

⁷ World Health Organization. *Tuberculosis Handbook*. Geneva: WHO 1998. WHO/TB/98.253

⁸ Corbett EL, Watt C, Walker N, Maher D, Raviglione MC, Williams BG, Dye C. The growing burden of tuberculosis: global trends and interactions with the HIV epidemic. *Archives of Internal Medicine* (to be published May 2003).

TABLE 3 Definitions of tuberculosis cases

CASE OF TUBERCULOSIS • A patient in whom tuberculosis has been bacteriologically confirmed, or has been diagnosed by a clinician. Note: any person given treatment for tuberculosis should be recorded.
DEFINITE CASE • Patient with positive culture for the <i>Mycobacterium tuberculosis</i> complex. In countries where culture is not routinely available a patient with 2 sputum smears positive for acid-fast bacilli (AFB+) is also considered a definite case.
SMEAR-POSITIVE PULMONARY CASE • At least two initial sputum smear examinations (direct smear microscopy) AFB+; or one sputum examination AFB+ and radiographic abnormalities consistent with active pulmonary tuberculosis as determined by the treating medical officer; or one sputum specimen AFB+ and culture positive for <i>M. tuberculosis</i> .
SMEAR-NEGATIVE PULMONARY CASE • Pulmonary tuberculosis not meeting the above criteria for smear-positive disease. Diagnostic criteria should include: at least 3 sputum smear examinations negative for AFB; and radiographic abnormalities consistent with active pulmonary TB; and no response to a course of broad-spectrum antibiotics; and decision by a clinician to treat the patient with a full course of anti-tuberculosis therapy; or positive culture but negative AFB sputum examinations.
EXTRAPULMONARY CASE • Patient with tuberculosis of organs other than the lungs e.g. pleura, lymph nodes, abdomen, genitourinary tract, skin, joints and bones, meninges. Diagnosis should be based on one culture-positive specimen, or histological or strong clinical evidence consistent with active extrapulmonary disease, followed by a decision by a clinician to treat with a full course of anti-tuberculosis chemotherapy. Note: a patient diagnosed with both pulmonary and extrapulmonary tuberculosis should be classified as a case of pulmonary tuberculosis.
NEW CASE • Patient who has never had treatment for tuberculosis, or who has taken anti-tuberculosis drugs for less than 1 month.
RELAPSE CASE • Patient previously declared cured but with a new episode of bacteriologically positive (sputum smear or culture) tuberculosis.
RETREATMENT CASE • Patient previously treated for tuberculosis whose treatment failed, who defaulted (treatment interrupted, see Table 5, 'Definitions of treatment outcomes'), or who relapsed.
CHRONIC CASE • Patient who is sputum positive at the end of a retreatment regimen.

TABLE 4 Estimated incidence of TB: high-burden countries, 2001

		NUMBER ESTIMATED				
		ALL CASES		SMEAR-POSITIVE CASES		
COUNTRY	POPULATION (1000s)	THOUSANDS	RATE PER 100 000 POP	THOUSANDS	RATE PER 100 000 POP	CUMULATIVE INCIDENCE (%)
1 India	1 025 096	1 820	178	815	79	22
2 China	1 284 972	1 448	113	651	51	39
3 Indonesia	214 840	582	271	261	122	45
4 Bangladesh	140 369	328	233	147	105	49
5 Nigeria	116 929	275	235	119	102	53
6 Pakistan	144 971	247	171	111	77	56
7 South Africa	43 792	243	556	99	226	58
8 Philippines	77 131	229	297	103	133	61
9 Russian Federation	144 664	193	134	87	60	63
10 Ethiopia	64 459	188	292	79	123	66
11 Kenya	31 293	161	515	67	213	68
12 DR Congo	52 522	159	302	69	131	69
13 Viet Nam	79 175	141	179	64	80	71
14 UR Tanzania	35 965	124	344	53	146	73
15 Brazil	172 559	111	64	49	28	74
16 Thailand	63 584	86	135	38	59	75
17 Zimbabwe	12 852	81	628	32	252	76
18 Cambodia	13 441	79	585	35	261	77
19 Myanmar	48 364	78	162	35	73	78
20 Uganda	24 023	78	324	33	138	79
21 Afghanistan	22 474	71	314	32	141	79
22 Mozambique	18 644	49	265	20	110	80
Total, high-burden countries	3 832 119	6 771	177	2 999	78	80
Global total	6 130 903	8 464	138	3 745	61	100

Treatment success and cure rate

TB control should ensure high treatment success before expanding case detection. The reason is that a proportion of patients given less than a fully-curative course of treatment remain chronically infectious, and continue to spread TB. Thus DOTS programmes must be shown to achieve high cure rates in pilot projects before attempting country-wide coverage.

To assess the quality of treatment programmes, we focus on smear-positive cases. We first compare the number of new cases registered for treatment (here, in 2000) with the number of cases notified as smear-positive (also in 2000). All registered cases should be evaluated, and the numbers registered and evaluated should therefore be the same (discrepancies arise e.g. when sub-national reports are not received at national level). If the number registered is not provided, we use the number notified for the cohort year as the denominator.

We then compile data on the six standard, mutually exclusive outcomes of treatment (Table 5).⁹ Treatment success is defined as the proportion of registered patients who were cured plus the proportion who completed treatment. These figures are reported as per-

centages of all registered cases, so that the six possible outcomes plus the fraction of cases not evaluated sum to 100%.¹⁰ If the sum of the outcomes is greater than the number registered, the sum of outcomes is used as the denominator.

For retreatment outcomes, we cannot assess how many cases should have been registered on retreatment regimens. If the number registered for retreatment is not stated, we express retreatment outcomes in terms of the number evaluated.

Planning for DOTS expansion in high-burden countries

Starting with the Global DOTS Expansion Plan (GDEP) 2002, WHO and other technical agencies worked during 2002 with NTP managers of the 22 HBCs to:

1. Assess progress made in implementing medium-term plans (3–5 years) for DOTS expansion aimed at reaching the 2005 targets;
2. Review major constraints faced by each HBC in reaching global targets on case detection and cure, and discuss remedial actions;
3. Update the country profiles published in 2002;³
4. Review the status of National

Interagency Coordination Committees (NICCs).

The GDEP is monitored through several mechanisms including direct discussions with NTP managers, collaboration with international technical agencies, monitoring missions, comprehensive programme reviews, regional NTP managers' meetings, and the annual meeting of the DOTS Expansion Working Group (DEWG).

During 2002, all 22 HBCs assessed progress in implementing their planned activities. Three countries (Bangladesh, Ethiopia, and the Philippines) undertook a comprehensive programme review involving major partners working in the country. All other countries, with the exception of Thailand and Zimbabwe, invited international technical agencies to co-monitor the implementation of their plan, and to discuss possible solutions to identified problems.

Implementation of national plans for DOTS expansion

Building on last year's systematic review of the goals, objectives, and strategies found in the DOTS expansion plan of each HBC, this report highlights progress toward implementation of those plans (objective 1). NTP managers and technical agencies working in countries updated information on the completeness of plans and on progress in their implementation.

Constraints to achieving targets and remedial actions

Following the initial implementation of DOTS expansion plans during 2002, a number of constraints that limit or impede expansion were identified. In preparation for the 3rd DEWG meeting (Montreal, Quebec, Canada, 5–6 October 2002), NTP managers for the 22 HBCs were asked to describe key constraints, and to identify possible reme-

TABLE 5 Definitions of treatment outcomes

CURED ● Initially smear-positive patient who has a negative sputum smear in the last month of treatment, and on at least one previous occasion.*
COMPLETED TREATMENT ● Patient who has completed treatment but does not meet the criteria for cure or failure.
DIED ● Patient who died during treatment, irrespective of cause.
FAILED ● Smear-positive patient who remained smear-positive, or became smear-positive again, at least 5 months after the start of treatment.
INTERRUPTED TREATMENT (DEFAULTED) ● Patient who did not collect drugs for 2 months or more at any time after registration.
TRANSFERRED OUT ● Patient who was transferred to another reporting unit and for whom treatment results are not known.
SUCCESSFULLY TREATED ● The sum of cases that were cured and that completed treatment (expressed as a percentage of the number registered in the cohort).**

* Some European countries define cure in terms of culture conversion, rather than sputum smear conversion.⁹

** A cohort is a group of patients diagnosed and registered for treatment during a given time period, usually one quarter of a year.

⁹ Veen J, Raviglione MC, Rieder HL, Migilori GB, Graf P, Grzemska M, Zalesky R. Standardized tuberculosis treatment outcome monitoring in Europe. *Eur Respir J* 1998; 12: 505–510.

¹⁰ Although treatment outcomes are expressed as percentages, they are usually referred to as 'rates'.

dial actions (objective 2). The top five constraints were presented for discussion during the meeting. Further discussions were then held at national level and remedial actions were planned. Major constraints to achieving the global targets, and solutions to overcome those constraints, are discussed in each HBC profile in Annex 3.

Development of country profiles

Country profiles were updated (objective 3) by incorporating information from the following sources: tables summarizing planning status (prepared for WHO in advance of the 3rd DEWG

meeting); posters presented at the Montreal meeting; consultations with, and reviews of the profiles by, NTP staff and collaborating technical agencies. Each country profile contains the five sections shown in Table 6.

Partnerships and coordination

The list of donors and collaborating organizations was updated through direct consultation with NTP managers, WHO regional offices, and partners. Major technical agencies, along with financial partners, are listed in each country profile. The coordination of these numerous agencies is vital for the efficient use of limited resources within countries. To assist this process, WHO recommends the establishment of a formal coordination mechanism, such as an NICC. Therefore, NTP managers in each of the 22 HBCs were asked to report on the existence, and activities, of the coordinating mechanism (objective 4).

Financing DOTS expansion in high-burden countries

In last year's report, we presented annual financial requirements and funding gaps for the 22 HBCs as averages based on five-year budgets for the period 2001–2005. A full analysis of the financial situation for this five-year period was also published as a scientific paper.¹¹ The present report gives new results under three headings:

1. Updated estimates of total resource gaps for the planning period 2001–2005 compared with the situation in March 2002, based on funding information that has become available since then;
2. Funding requirements and expected funding gaps for 2003, based on WHO's new financial monitoring system for TB control;
3. Summary indicators on government contributions to the cost of TB con-

trol, combining information from the financial monitoring system and data on national health accounts.¹²

Revised estimates of funding gaps for 2001–2005

Data collection focused on eight main funding bodies that provided information to WHO: the GFATM, the World Bank (loans), CIDA, DFID, the Dutch government, the GDF, the Italian Corporation, and USAID. For the GFATM, we assume that the first disbursements will occur in 2003, and therefore Year 1 of any grant is taken to be 2003. In China, a new World Bank/DFID funding package has been developed in which DFID contributes substantial funds to interest payments on a loan. Rather than reporting the total value of the loan plus grant, we report new funding as the actual amount available for TB control during the period 2002–2005 (which is less than the loan plus the value of interest payments). Grants from the bilateral development agencies are reported as the amounts made directly available to the 22 HBCs, since this is what is relevant when considering funding gaps. The total amount of funds being allocated for TB control by these agencies may, however, be higher.

We then compare the total volume of new funds with the total resource requirements and funding gaps that were estimated in March 2002 for the period 2001–2005. In making this comparison, we distinguished “identified funding gaps” from “possible funding gaps”. The former are the shortfalls that NTPs identify in their own budgets. The latter are the potential gaps that have not been identified by NTPs, and arise in two sets of circumstances. The first is when the total NTP budget has been defined, but funding sources are not specified (this applied, in March 2002, to India for the period 2004–2005, and Ethiopia for the period 2002–6). In such cases, the possible gap is set equal to the total budget requirement. The second is when funding for use of general health services infrastructure is not assessed and it is believed that health service capacity is insufficient to man-

TABLE 6 **Standard format of country profiles (Annex 3)**

1. Overview of the TB control system describes the TB control system in the context of the overall health care system
2. Case detection and treatment presents the most recent surveillance data available to WHO including, where possible, preliminary information on coverage during 2002
3. Implementation of national plan for TB control describes the progress toward implementation of the DOTS expansion plans, and includes a discussion of constraints that affect each country's ability to implement the planned strategies
4. Progress in TB control is a summary box showing the key epidemiological and financial indicators, the key constraints to achieving targets, the remedial actions needed to overcome those constraints
5. Partnerships describes the key technical and financial partners, along with the kind of support each provides
6. Financing presents budget estimates, existing funding, and budget gaps for 2003 (see also “Financing DOTS expansion in high-burden countries”)

¹¹ Floyd K, Blanc L, Raviglione M, Lee JW. Resources required for global tuberculosis control. *Science* 2002; 295:2040–2041

¹² World Health Organization. *The World Health Report 2002: Reducing Risks, Promoting Healthy Life*. Geneva: WHO 2002.

age a major expansion in patient recruitment. In this instance, we calculate the possible gap as the difference between the costs to diagnose and treat five times the 1999 caseload, and the cost for the number of patients that would need to be treated in the five years 2001–2005 if control targets are to be reached.

Where new funding for the period 2002–2005 is for an identified gap, it is subtracted from the identified funding gap estimated in March 2002. Where funding is filling a gap that has not been identified, and funding is less than or equal to the possible gap, it is subtracted from the possible gap estimated in March 2002. Where funding has been provided to countries that had neither identified nor possible gaps in March 2002, or where new funding exceeds the estimated funding gaps, we calculate the apparent excess and present that separately.

Funding requirements and expected funding gaps for 2003

In 2001, 16 of the 22 HBCs prepared five-year plans and budgets for the period 2001–2005, which formed the basis of the data presented in 2002.³ In addition, financial information was included (at least partially) for five countries (Brazil, the Russian Federation, South Africa, Thailand, Zimbabwe) based on cost estimates available elsewhere. There was no financial information for Mozambique. Thirteen of the 16 available five-year plans contained annual budgets for 2002. To monitor budget requirements and anticipated funding gaps on an annual basis, WHO launched a new project called “Global Financial Monitoring of TB Control”¹³ in 2002 (Table 6).

For the first round of data collection, a standard questionnaire was sent to all NTP managers in summer 2002

TABLE 7 **Global Financial Monitoring of TB Control**

The objectives of this project are to:

1. Assess the availability of annual workplans and budgets;
2. Provide annually, in standard format, a detailed breakdown of NTP budgets, including available funding and funding sources for each line item;
3. Estimate the costs of using general health services for NTP activities (infrastructure costs), as a component of the total economic costs of TB control;
4. Estimate budgets and costs as national totals and per patient;
5. Identify resource gaps for NTP budgets, and required infrastructure.

(Annex 2). The questionnaire asks for data in three categories. The first category includes the total NTP budget required for 2003 (or the relevant fiscal year e.g. 1 April 2003 to 31 March 2004); funds available from regular government budgets, loans, insurance, and grants; and funding gaps. The budget line items used were generally equivalent to those employed for the 2002 report, with the following modifications. The category “buildings” was enlarged to include all capital expenditures (e.g. expenditures for vehicles, microscopes, x-ray machines); “training” was combined with “programme management and supervision” to form a general category “basic NTP activities”; in addition to “dedicated staff”, we introduced “dedicated facilities”.¹⁴ We also added “activities related to the provision of DOT”¹⁵ and dropped “miscellaneous”.

The second category asks for data on infrastructure costs. These costs are based on the proportion of the costs for staff and facilities in the general health services that are allocated for TB control. The costs of these shared resources are typically not included in NTP budgets.

The third category asks for information about how TB diagnosis and treatment are provided e.g. the average

numbers of sputum smears, clinic visits, and days in hospital per patient treated. These data are useful for making estimates of the total resources required for TB control when NTP budgets do not cover all costs.

Questionnaires were analysed to produce summary tables of budget requirements, funding, and funding gaps for each of the 22 HBCs (Annex 3). Each table has two major categories: NTP budget requirements, and infrastructure costs. The budget per patient is calculated as the total budget divided by either (a) the total number of patients the NTP estimates will be treated in 2003 or, if this figure is not provided, as (b) WHO estimates¹¹ of the total number of patients that would need to be treated in 2003 if 70% case detection is to be reached by 2005.

Where countries did not provide infrastructure costs for 2003, WHO estimates are given. These estimates are calculated as the difference between the average annual budget estimated for 2001–2005 and the average annual cost of all resources estimated to be required for TB control in 2001–2005, as reported last year.³

Summary indicators

The most important summary indicator is the budget gap, measured as the proportion of the required budget that is available. In addition, we tried to analyse the role of government contributions to the NTP budget, and to the total costs of TB control, including infrastructure costs. In some countries, the government contribution to total costs is large because of a substantial investment in infrastructure, even though the direct contribution to TB control, as expressed in the NTP budget, is small. Assessing the government share of costs provides useful information on:

1. Programme sustainability: a heavy reliance on donor contributions may have negative effects on the long-term sustainability of the programme; such countries require regular reassessments of changes in donor commitment.

¹³ Funded jointly by the Rockefeller Foundation and WHO.

¹⁴ Facilities that are used exclusively for TB control, e.g., TB clinics, TB hospitals

¹⁵ e.g. incentives for treatment observers or patients

2. Political commitment: the first of the five components of the DOTS strategy is usually reflected in the government's financial provisions for TB control. For further analysis we also included the proportion of government health expenditures used for TB control.¹⁶

As yet, no targets exist for any of the indicators related to government contributions. For instance, there is currently no definition of an appropriate proportion of a government's health care budget that should be allocated for TB, or the share of an NTP budget that should be funded by the government. Nonetheless, comparisons of these statistics between countries can be revealing.

¹⁶ There are various difficulties in assessing government health expenditures used for TB. The statistics published in WHO's World Health Report are for total government health expenditures (latest figures are for 2000), whereas TB financial data are budgets (currently for 2003). Until WHR and the TB monitoring system both provide expenditure data for the same year, any figures derived from the comparison can be no more than rough estimates.

Results

Progress in global TB control Countries reporting to WHO

By 15 January 2003, 183 (87%) of 210 countries and territories reported case notifications for 2001 and/or treatment outcomes for patients registered in 2000. We received reports from all 22 HBCs (Tables 8a and 8b).

Categorization of countries, 1995-2001

The number of countries implementing DOTS increased by seven during 2001, bringing the total to 155 out of 210 (Figure 1, Table 6a). All 22 HBCs were classified as DOTS in 2001. One hundred and two countries had implemented DOTS in over 90% of the country (category 4; Figures 2 and 3).

Two countries were in the DOTS pilot phase (category 2), and 51 were in the expansion phase (category 3). Since 1995, countries have generally been moving out of category 1 (non-DOTS, high incidence) into categories 3 and 4 (Figure 2).

By the end of 2001, 61% of the world's population lived in counties, districts, oblasts, and provinces of coun-

TABLE 8A List of countries implementing DOTS, 2001

CATEGORY 2 (2 countries)	CATEGORY 3 (51 countries)	CATEGORY 4 (102 countries)
Azerbaijan Paraguay	Afghanistan Albania Armenia Australia <u>Brazil</u> Bulgaria Burundi Cape Verde Central African Republic China Costa Rica Côte d'Ivoire <u>Dominican Republic</u> DPR Korea DR Congo Ecuador Eritrea Ethiopia <u>Guatemala</u> <u>Guyana</u> Haiti India Italy Japan Kyrgyzstan Lao PDR Lithuania Mexico <i>Micronesia</i> Myanmar <i>Namibia</i> Nepal Nigeria <u>Pakistan</u> Panama <u>Papua New Guinea</u> Poland Republic of Moldova Romania Russian Federation Sierra Leone South Africa <i>Sri Lanka</i> TFYR Macedonia Thailand Turkmenistan Ukraine <u>Uzbekistan</u> Vanuatu <i>Venezuela</i> Yugoslavia	Algeria Andorra Antigua and Barbuda <u>Argentina</u> Austria Bahrain Bangladesh Barbados Belgium Belize Bhutan <u>Bolivia</u> Bosnia & Herzegovina Botswana Brunei Darussalam Burkina Faso Cambodia Canada Cayman Islands Chile China, Hong Kong SAR China, Macao SAR Congo Cook Islands Croatia Cuba Czech Republic Djibouti Egypt El Salvador Estonia Fiji French Polynesia Georgia Germany <u>Ghana</u> Guam <u>Honduras</u> Hungary Iceland Indonesia Iran Iraq Israel Jamaica Jordan Kazakhstan Kenya Kiribati Latvia Lebanon Luxembourg Madagascar Malawi Maldives Malta Marshall Islands Mauritius Mongolia Montserrat Morocco Mozambique Nauru Netherlands New Zealand Nicaragua Niue Northern Mariana Is Norway Oman Peru <u>Philippines</u> Portugal Puerto Rico Qatar Rwanda Saint Kitts and Nevis Saint Lucia Samoa San Marino Saudi Arabia Senegal Seychelles Singapore Slovakia Slovenia Solomon Islands <u>Somalia</u> St Vincent & Grenadines <u>Sudan</u> Sweden Syrian Arab Republic Tonga Tunisia Uganda <u>United Arab Emirates</u> UR Tanzania Uruguay USA Viet Nam <u>Yemen</u> Zimbabwe

Bold: countries that adopted DOTS in 2001.

Italics: countries that moved one or more categories down since 2000 due to decrease in coverage.

Underline: countries that moved one or more categories up since 2000.

TABLE 8B **List of countries not implementing DOTS or not reporting to WHO, 2001**

CATEGORY 0 (27 countries)	CATEGORY 1 (25 countries)	CATEGORY 5 (3 countries)
Angola	<u>American Samoa</u>	Category 5 (3 countries)
Bahamas	Anguilla	Bermuda
Benin	Belarus	Monaco
Cameroon	British Virgin Islands	Netherlands Antilles
Chad	<u>Colombia</u>	
Comoros	Denmark	
Cyprus	Finland	
Dominica	France	
Equatorial Guinea	Greece	
Gabon	Ireland	
Gambia	<u>Malaysia</u>	
<i>Grenada</i>	New Caledonia	
Guinea	Rep. Korea	
Guinea-Bissau	Sao Tome and Principe	
Kuwait	Spain	Bold: countries that reported in 2000 and were classified as DOTS, but did not report in 2001
Lesotho	Suriname	
Liberia	Swaziland	<i>Italic:</i> countries that reported in 2000 and were classified as non-DOTS, but that did not report in 2001
Libyan Arab Jamahiriya	Switzerland	
Mali	Tajikistan	<u>Underline:</u> countries that reported in 2001, and were classified as DOTS in 2000 but not in 2001
<i>Mauritania</i>	Tokelau	
Niger	Trinidad and Tobago	
Palau	Turkey	
Togo	Turks & Caicos Islands	
Tuvalu	United Kingdom	
US Virgin Islands	Zambia	
Wallis & Futuna Is		
West Bank and Gaza		

tries that provide DOTS services. Reported DOTS population coverage was 66% or more in the WHO regions of Africa, the Americas, the Eastern Mediterranean and the Western Pacific, and lowest in the European Region (33%, Figure 4). Table 9 presents DOTS coverage for each HBC, and for the whole world, from 1995 to 2001.

Sixteen countries implemented DOTS for the first time in 2001 (Table 8a). Seven achieved moderate coverage (10–90%, category 3), and nine reached high coverage (> 90%, category 4).

Case notifications, 1995–2001

The 183 countries reporting to WHO notified 3.8 million cases (62 per 100 000 population), of which 1.6 million (42%) were sputum smear-positive (Table 10). These totals are slightly larger than those for 2000.

Among all cases reported for 2001, 2.4 million (over half) originated in DOTS areas (Table 8). Of the smear-positive cases, 1.2 million were notified under DOTS. These figures represent an increase of 22% and 16% over 2000. The African (21%), South-East Asia (37%), and Western Pacific Regions (22%) together accounted for 80% of all notified cases and similar proportions of sputum smear-positive cases (Figure 5).

In DOTS areas, 49% of all new cases were smear-positive (45–60% expected), compared with 30% in other areas. Sixty percent of new pulmonary cases were sputum smear-positive in DOTS areas (55–70% expected), compared with 36% elsewhere (Tables 10 and 11).

The global, crude notification rate (all forms of TB for all reporting countries) has been more or less stable since records began in 1980 (Figure 6). Based on notifications from countries thought to have reliable data, and where there has apparently been no significant change in case finding effort (Figure 7),³ we estimate that the global incidence rate of TB was growing at 0.4%/year in 2001.

The number of cases enrolled in DOTS programmes has increased much more quickly than the overall incidence.

FIGURE 1 **Number of countries implementing DOTS, 1990–2001**

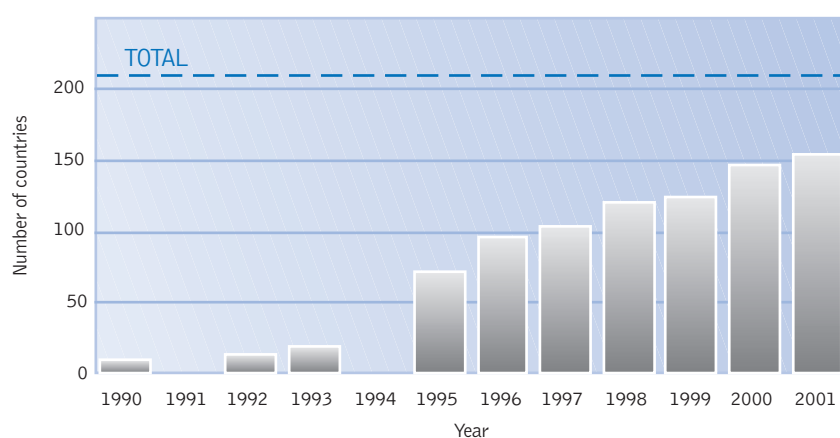


FIGURE 2 Changes in the categorization of countries, 1995-2001, according to the scheme in Table 1

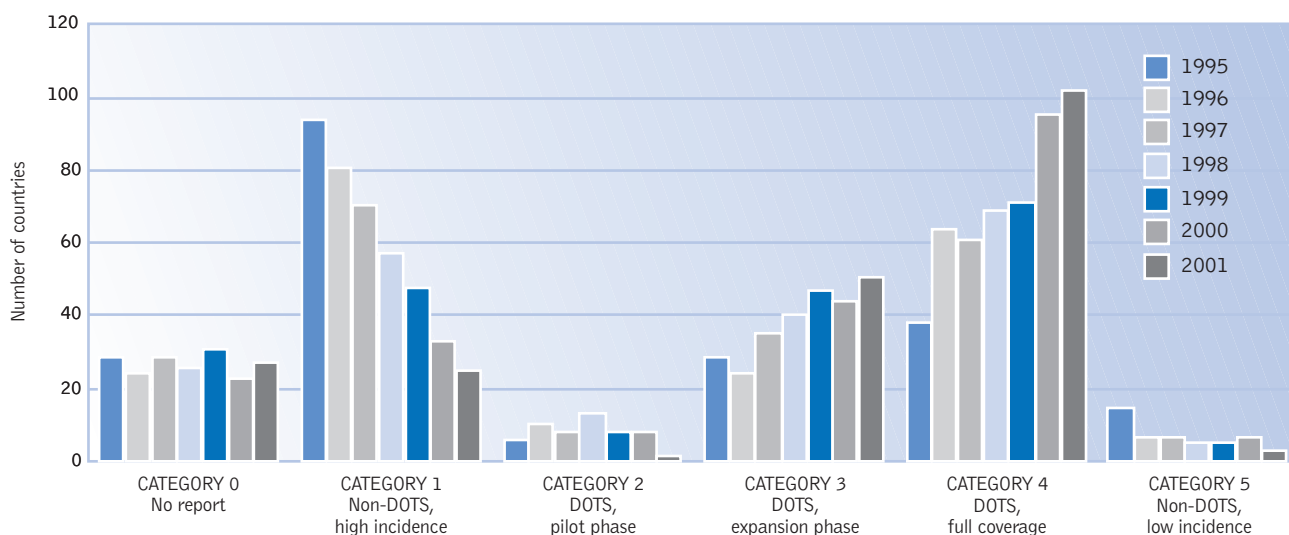


FIGURE 3 Proportions of countries with different levels of DOTS coverage, 2001

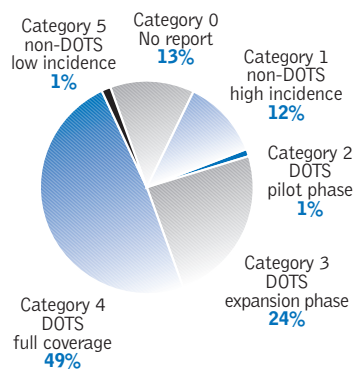


FIGURE 4 DOTS population coverage by WHO region, 2001

Each bar shows the population of the region, and the shaded portion of the bar shows the population covered by DOTS. The number above each bar is the percent of the population covered.

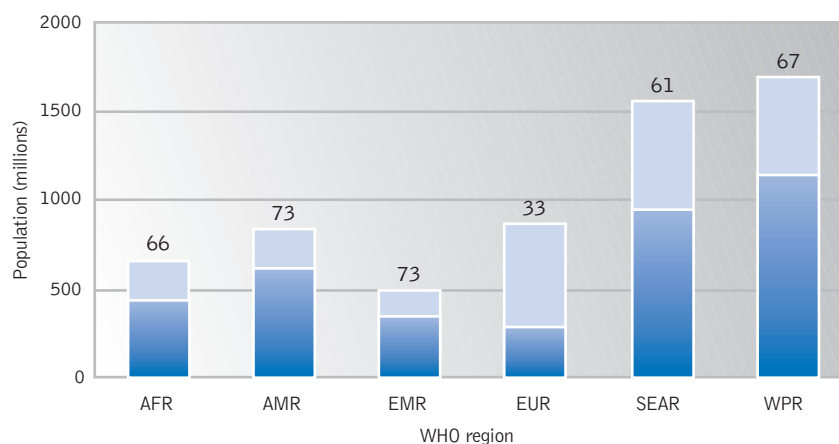
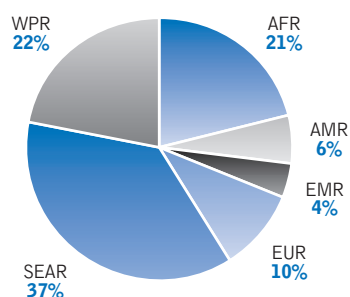


FIGURE 5 Proportions of all notified cases, and of smear-positive cases, by WHO region, 2001

ALL CASES



ALL CASES

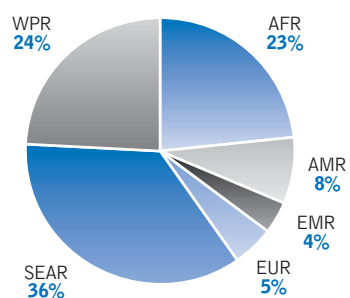


FIGURE 6 Global trend in the case notification rate (all forms), 1980-2001

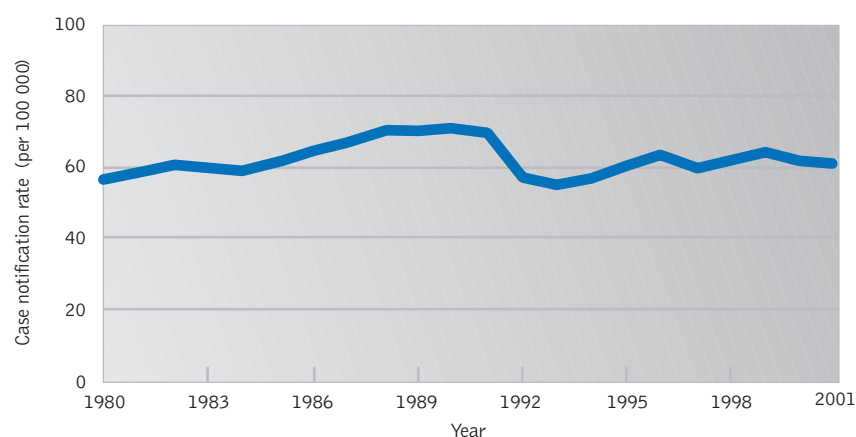


TABLE 9 Progress in DOTS implementation: high-burden countries, 1995-2001

	PERCENT OF POPULATION COVERED BY DOTS						
	1995	1996	1997	1998	1999	2000	2001
1 India	1.5	2	2.3	9	13.5	30	45
2 China	49	60.4	64.2	63.9	64	68	68
3 Indonesia	6	13.7	28.3	80	90	98	98
4 Bangladesh	40.5	65	80	90	90	92	95
5 Nigeria	47	30	40	45	45	47	55
6 Pakistan	2	8	—	8	8	9	24
7 South Africa	—	0	13	22	66	77	77
8 Philippines	4.3	2	15	16.9	43	89.6	95
9 Russian Federation	—	—	2.3	5	5	12	16
10 Ethiopia	39	39	48	64.4	63	85	70
11 Kenya	15	100	100	100	100	100	100
12 DR Congo	47	51.4	60	60	62	70	70
13 Viet Nam	50	95	93	96	98.5	100	100
14 UR Tanzania	98	100	100	100	100	100	100
15 Brazil	—	0	0	3	7	7	32
16 Thailand	—	1.1	4	32	59	70	82
17 Zimbabwe	—	0	0	100	11.6	100	100
18 Cambodia	60	80	88	100	100	99	100
19 Myanmar	—	59	60	60.3	64	77	84
20 Uganda	—	0	100	100	100	100	100
21 Afghanistan	—	—	12	11	13.5	15	12
22 Mozambique	97	100	84	95	—	100	100
High-burden countries	24	32	36	43	46	55	61
Global	22	32	37	44	47	57	61

Zero indicates that a report was received, but the country had not implemented DOTS.

— Indicates that no report was received.

TABLE 10 Summary of notifications by WHO region, 2001

% OF POP *			NOTIFICATIONS		NEW SS+	% OF NEW PULM
			NUMBER	%	NOTIFICATIONS	CASES SS+ *
AFR	DOTS	66	700 576	86	335 405	62
	non-DOTS	20	110 596	14	40 592	45
	no report	14				
	Total		811 172		375 997	
AMR	DOTS	73	127 050	55	73 814	73
	non-DOTS	27	102 823	45	55 722	67
	no report	0.0				
	Total		229 873		129 536	
EMR	DOTS	71	134 215	81	61 864	67
	non-DOTS	26	30 845	19	7 060	31
	no report	3.0				
	Total		165 060		68 924	
EUR	DOTS	33	135 173	37	28 653	39
	non-DOTS	67	232 963	63	57 359	31
	no report	0.0				
	Total		368 136		86 012	
SEAR	DOTS	61	710 826	50	353 385	59
	non-DOTS	39	704 019	50	208 516	33
	no report	0.0				
	Total		1 414 845		561 901	
WPR	DOTS	67	615 037	75	328 244	59
	non-DOTS	33	208 986	25	51 539	30
	no report	0.0				
	Total		824 023		379 783	
Global	DOTS	61	2 422 877	64	1 181 365	60
	non-DOTS	37	1 390 232	36	420 788	36
	no report	2.0				
	Total		3 813 109		1 602 153	

* Percent of population: the regional DOTS population includes only that portion of the population of DOTS countries that is covered by DOTS.

The increment in smear-positive cases detected by DOTS programmes has been roughly constant since 1995 (linear increase in total cases detected): 143 000 additional cases were diagnosed between 2000 and 2001, similar to the annual average of about 137 000 cases.

Figure 7 shows the series of case notifications that have been used to judge trends in incidence for groups of epidemiologically similar countries. Notification rates were standardized to 100 in 1990, in order to reveal trends more clearly by eliminating the absolute differences between countries in that year. Although the incidence rate of TB has been rising quickly in the former Soviet countries (6%/year, 1997–2000), and in the eastern and southern African countries most affected by HIV/AIDS (5%/year), there is some evidence that the rates of increase are slowing in both parts of the world (Figure 8). The deceleration is faster for the former Soviet countries than for the African countries.

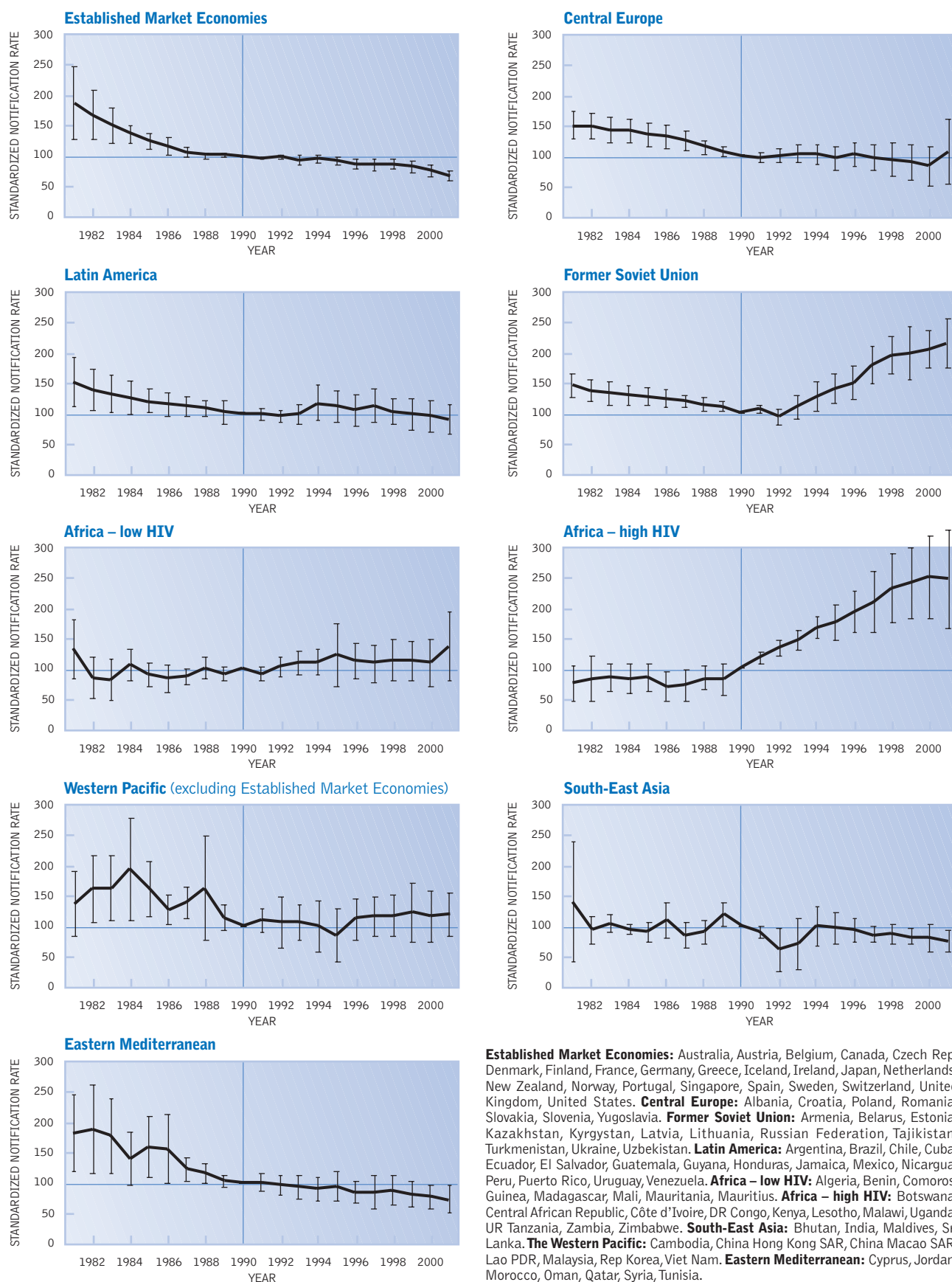
TABLE 11 Case notifications: high-burden countries, 2001

	NUMBER NOTIFIED				% OF NEW PULMONARY CASES SMEAR POSITIVE *	
	ALL CASES		SMEAR-POSITIVE			
	DOTS	NON-DOTS	DOTS	NON-DOTS	DOTS	NON-DOTS
1 India	409 049	676 026	185 277	199 550	56	33
2 China	362 172	123 049	188 480	24 286	56	22
3 Indonesia	92 792	—	53 965	—	61	—
4 Bangladesh	63 753	12 549	38 728	2 049	67	20
5 Nigeria	29 560	16 282	18 882	4 528	69	28
6 Pakistan	17 333	16 733	6 255	4 680	44	37
7 South Africa	121 026	27 231	71 571	12 237	75	61
8 Philippines	107 133	—	59 341	—	58	—
9 Russian Federation	14 531	117 946	4 079	22 526	32	21
10 Ethiopia	94 957	—	33 028	—	54	—
11 Kenya	73 017	—	31 307	—	53	—
12 DR Congo	66 748	—	42 054	—	84	—
13 Viet Nam	90 679	—	54 202	—	76	—
14 UR Tanzania	61 603	—	24 685	—	54	—
15 Brazil	7 658	66 808	4 086	34 392	71	66
16 Thailand	49 656	—	28 363	—	65	—
17 Zimbabwe	56 222	—	15 370	—	33	—
18 Cambodia	19 170	—	14 361	—	90	—
19 Myanmar	41 432	1 406	20 686	475	60	40
20 Uganda	36 829	—	17 291	—	53	—
21 Afghanistan	9 930	—	4 639	—	63	—
22 Mozambique	22 094	—	13 964	—	75	—
High-burden countries	1 847 344	1 058 030	930 614	304 723	60	32
Global	2 422 877	1 390 232	1 181 365	420 788	60	36

* Expected percentage of new pulmonary cases that are smear positive is 65–80%.
— Not available.

FIGURE 7 Trends in case notification rates for selected countries in different regions, 1981-2001

To highlight trends in notifications within regions, the rates for all countries have been expressed relative to an arbitrary standard of 100 in 1990. Error bars are 95% CI on the standardized (unweighted) rates. Countries selected in each region are those for which case notifications were judged to represent trends in incidence over the period 1981-2000.



Case detection rate, 1995-2001

The 3.8 million cases of tuberculosis (all forms) notified in 2001 represent 45% of the 8.5 million estimated new cases; the total of 1.6 new smear-positives is 43% of the 3.7 million estimated cases (Tables 4, 10, 12). Both of these proportions have remained fairly stable over the seven years for which we have compiled data. Twenty-nine percent of all estimated cases, and 32% of estimated smear-positive cases, were detected by DOTS programmes. The detection rate of smear-positive cases within DOTS programmes has been rising faster than the overall smear-positive detection rate, approaching a ceiling of about 40% (Figure 9, Table 12). DOTS detection rates in 2001 were lowest in the European Region and highest in the Americas (Figure 10). The Americas also had the highest rate of detection of all smear-positives.

Treatment results, 1994-2000 cohorts

Just over one million new sputum smear-positive cases were notified under DOTS in 2000, approximately the same number that was registered for treatment in 2000 (Table 13a, Annex 6 lists notified and registered cases for 2000 by country). However, there were unexplained discrepancies between notifications and registrations in data submitted by Pakistan, South Africa, Thailand, and Uganda.

Of the registered DOTS cases, 98% were evaluated for treatment outcome (Tables 13a and 14). Seventy-four percent of the registered cases were cured and a further 8% completed treatment (no laboratory confirmation of cure), giving an overall treatment success rate of 82% in DOTS areas. Twenty-three percent of all estimated smear-positive cases were treated successfully under DOTS.

All indicators of treatment outcome were worse in non-DOTS areas (Figure 11, Table 13b). The discrepancy between cases notified and registered was bigger, and both treatment success (67%) and cure rate were significantly lower

FIGURE 8 Trends in TB notification rates 1991-2001

Average percent change in notification rates between consecutive years for 2 groups of countries; Africa - high HIV (thin line) and former Soviet countries (thick line). See Figure 7 for countries included.

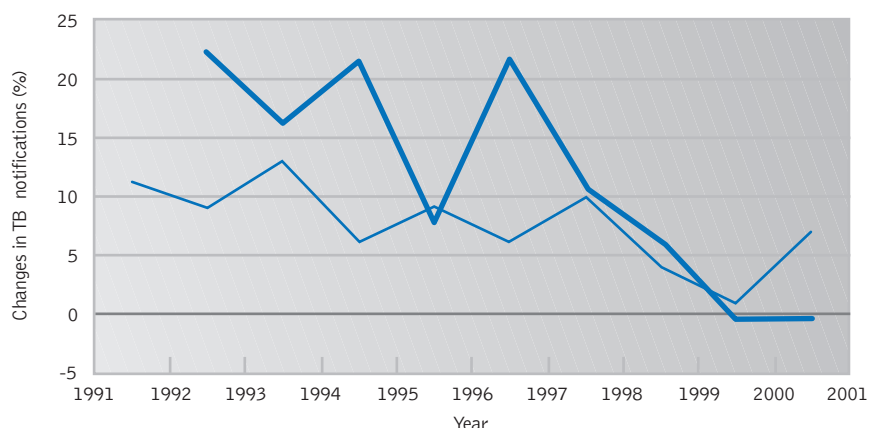


FIGURE 9 Global detection rate of new smear-positive cases (pale bars) and DOTS detection rate (dark bars), 1995-2001

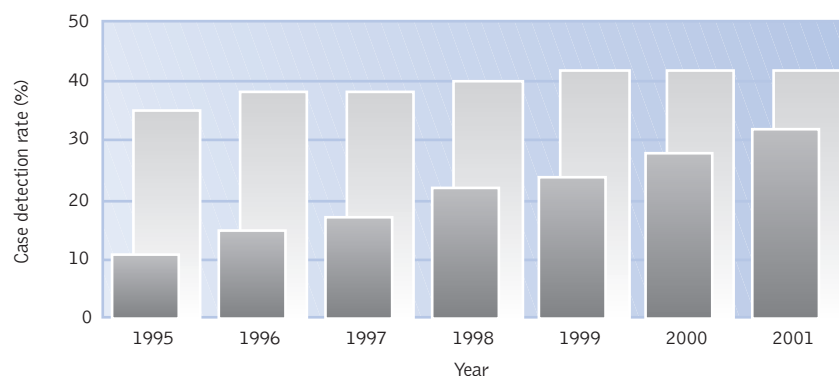


FIGURE 10 Regional detection rate of new smear-positive cases (pale bars) and DOTS detection rates (dark bars), 2001

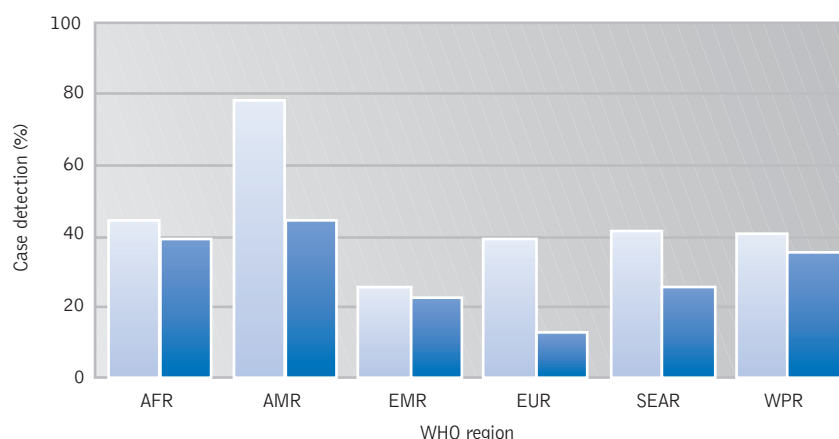


TABLE 12 **Case detection rate of new smear-positive cases (%): high-burden countries, 1995–2001**

	DOTS PROGRAMMES							WHOLE COUNTRY						
	1995	1996	1997	1998	1999	2000	2001	1995	1996	1997	1998	1999	2000	2001
1 India	0.2	0.8	1.0	1.5	6.5	12	23	33	36	34	35	43	43	47
2 China	15	22	24	30	29	30	29	22	27	30	34	33	33	33
3 Indonesia	1.3	4.5	7.5	12	19	19	21	12	*	*	*	*	20	*
4 Bangladesh	6.5	14	18	23	24	25	26	15	21	23	26	26	26	28
5 Nigeria	11	17	12	13	15	15	16	*	12	*	*	*	*	20
6 Pakistan	1.0	1.8	—	3.9	2.1	3.0	5.6	2.5	*	—	14	6	*	10
7 South Africa	—	—	6.3	22	67	70	72	43	71	82	90	89	85	85
8 Philippines	0.4	0.5	3.2	10	20	49	58	96	87	80	69	72	66	*
9 Russian Federation	—	0.4	0.9	0.9	1.6	4.5	4.7	60	64	60	57	28	33	31
10 Ethiopia	16	22	25	28	30	41	42	*	*	*	*	30	*	*
11 Kenya	55	57	54	58	56	46	47	*	*	*	*	*	51	*
12 DR Congo	39	46	46	58	57	56	61	42	*	45	58	*	*	*
13 Viet Nam	30	59	78	83	84	84	85	59	77	*	86	84	*	*
14 UR Tanzania	52	53	52	53	51	48	47	*	*	*	*	*	*	*
15 Brazil	—	—	—	4.2	4.1	7.8	8.3	79	79	80	82	80	82	78
16 Thailand	—	0.3	5.0	21	40	47	75	54	45	35	*	*	*	*
17 Zimbabwe	—	—	—	53	50	47	47	39	49	56	*	*	*	*
18 Cambodia	42	35	44	45	49	44	41	*	44	*	*	*	*	*
19 Myanmar	—	25	26	29	33	49	59	25	28	28	*	*	*	60
20 Uganda	—	—	60	61	59	54	52	50	55	60	*	60	*	*
21 Afghanistan	—	—	2.0	6.0	54	9.3	15	—	—	*	*	*	*	*
22 Mozambique†	63	60	61	65	—	67	68	*	*	*	*	66	*	*
High-burden countries	8.1	12	15	19	23	27	31	31	34	34	37	39	39	41
Global	11	15	17	22	24	28	32	35	38	38	40	42	42	43

— Not available.

* No additional data beyond DOTS report.

† No report was received for Mozambique for 1999, but the most recent report included updated information for 1999.

TABLE 13A **Treatment outcomes for new smear-positive cases: high-burden countries, DOTS strategy, 2000 cohort***

TREATMENT OUTCOMES (%)*													% EST* CASES SUCCESSFULLY TREATED UNDER DOTS
	NOTIFIED	REGISTERED*	REGST'D (%)	CURED	COMPLETED TREATMENT*	DIED	FAILED	DEFAULTED	TRANS-FERRED	NOT EVAL'D	TREATMENT SUCCESS (%)	TREATED UNDER DOTS	
1 India	95 012	94 966	100	82	1.2	4.4	2.9	8.5	0.5	0.1	84	9.8	
2 China	191 280	191 280	100	95	0.0	1.0	1.0	0.8	0.9	1.8	95 †	28	
3 Indonesia	50 633	52 338	103	70	17	2.0	1.3	4.2	1.0	4.1	87 †	18	
4 Bangladesh	35 831	35 831	100	79	3.4	4.4	0.8	7.6	2.8	1.9	83	20	
5 Nigeria	17 423	16 372	94	65	14	5.9	2.2	11	2.0	0.0	79	11	
6 Pakistan	3 285	4 074	124	58	16	3.6	0.7	17	4.2	0.0	74	2.8	
7 South Africa	62 399	74 696	120	57	9.0	6.6	1.4	12	13	1.1	66	55	
8 Philippines	49 991	50 196	100	73	15	2.3	1.2	5.8	2.8	0.1	88 †	43	
9 Russian Federation	3 674	3 616	98	64	3.7	6.3	13	9.3	3.7	0.0	68	3.0	
10 Ethiopia	30 510	29 662	97	63	17	6.2	1.2	8.7	3.5	0.3	80	32	
11 Kenya	26 162	28 376	108	66	14	5.2	0.4	8.6	5.8	0.0	80	40	
12 DR Congo	36 123	36 123	100	69	8.4	5.9	0.9	8.3	3.7	3.5	78	43	
13 Viet Nam	53 169	53 169	100	90	2.2	3.1	1.0	1.8	1.9	0.1	92 †	77	
14 UR Tanzania	24 049	23 923	99	72	6.3	10	0.3	5.6	5.2	0.0	78	38	
15 Brazil	3 951	3 951	100	56	17	2.9	0.3	4.7	2.7	16	73	5.7	
16 Thailand	17 754	23 061	130	65	3.4	8.2	1.7	6.5	2.7	12	69	42	
17 Zimbabwe	14 392	14 392	100	61	7.6	12	0.2	6.8	11	2.0	69	32	
18 Cambodia	14 822	14 775	100	88	3.5	3.6	0.3	3.9	0.8	0.0	91 †	40	
19 Myanmar	17 254	16 792	97	73	9.4	5.3	1.7	9.3	1.6	0.0	82	39	
20 Uganda	17 246	13 874	80	33	30	7.4	0.4	17	5.8	6.3	63	27	
21 Afghanistan	2 892	2 918	101	79	6.4	3.5	2.9	6.1	2.1	0.0	86 †	8.0	
22 Mozambique	13 257	13 296	100	73	2.3	9.9	1.3	11	2.6	0.0	75	50	
High-burden countries	781 109	797 681	102	77	6.6	4.2	1.3	6.1	3.2	1.7	84	23	
Global (DOTS)	1 030 193	1 025 286	100	74	7.9	4.4	1.5	6.5	3.2	2.2	82	23	

* Cohort: cases diagnosed during 2000 and treated/followed-up through 2001. See table 5 and accompanying text for definitions of treatment outcomes. If the number registered was provided, this (or the sum of the outcomes, if greater) was used as the denominator for calculating treatment outcomes. If the number registered was missing, then the number notified (or the sum of the outcomes, if greater) was used as the denominator. Est: estimated cases for 2000 (as opposed to notified or registered).

† Treatment success > 85%.

TABLE 13B **Treatment outcomes for new smear-positive cases: high-burden countries, non-DOTS strategy, 2000 cohort***

			REGST'D (%)	TREATMENT OUTCOMES (%)*							TREATMENT SUCCESS (%)	
				NOTIFIED	REGISTERED*	CURED	COMPLETED TREATMENT*	DIED	FAILED	DEFAULTED		TRANS-FERRED
1	India	254 362	62 027	24	46	20	1.1	1.2	24	3.6	3.5	66
2	China	22 486	22 486	100	81	0.0	1.6	7.4	4.0	2.8	2.9	81
3	Indonesia	—	—	—	—	—	—	—	—	—	—	—
4	Bangladesh	2 653	2 653	100	49	16	0.7	1.2	24	7.6	2.4	65
5	Nigeria	—	—	—	—	—	—	—	—	—	—	—
6	Pakista	—	—	—	—	—	—	—	—	—	—	—
7	South Africa	14 992	11 580	77	34	11	5.7	0.9	14	18	16	45
8	Philippines	17 065	—	—	—	—	—	—	—	—	—	—
9	Russian Federation	23 793	—	—	—	—	—	—	—	—	—	—
10	Ethiopia	—	—	—	—	—	—	—	—	—	—	—
11	Kenya	2 611	—	—	—	—	—	—	—	—	—	—
12	DR Congo	—	—	—	—	—	—	—	—	—	—	—
13	Viet Nam	—	—	—	—	—	—	—	—	—	—	—
14	UR Tanzania	—	—	—	—	—	—	—	—	—	—	—
15	Brazil	37 235	30 056	81	48	23	4.4	0.4	9.1	6.3	8.9	71
16	Thailand	—	—	—	—	—	—	—	—	—	—	—
17	Zimbabwe	—	—	—	—	—	—	—	—	—	—	—
18	Cambodia	—	—	—	—	—	—	—	—	—	—	—
19	Myanmar	—	—	—	—	—	—	—	—	—	—	—
20	Uganda	—	—	—	—	—	—	—	—	—	—	—
21	Afghanistan	—	218	—	40	44	2.8	2.8	10	0.5	0.0	84
22	Mozambique	—	—	—	—	—	—	—	—	—	—	—
	High-burden countries	375 197	129 020	34	52	16	2.3	2.1	16	5.5	5.8	68
	Global (non-DOTS)	505 687	206 561	41	49	18	3.1	2.7	14	5.4	8.0	67

* See notes for Table 13a.

— Not available.

TABLE 14 **Treatment outcomes for new smear-positive cases (%), by WHO region and strategy, 2000 cohort***

					TREATMENT OUTCOMES (%)*							% EST* CASES SUCCESSFULLY TREATED UNDER DOTS	
WHO REGION / STRATEGY		NOTIFIED	REGISTERED	REGST'D (%)	CURED	COMPLETED TREATMENT*	DIED	FAILED	DEFAULTED	TRANS-FERRED	NOT EVAL'D	TREATMENT SUCCESS (%)	
AFR	DOTS	284 902	314 164	110	61	12	7.1	1.1	11	6.7	2.3	72	29
	non-DOTS	28 223	30 685	109	42	13	5.6	2.4	14	13	10	55	
AMR	DOTS	68 874	67 380	98	69	12	4.6	1.0	5.7	2.9	4.9	81	32
	non-DOTS	53 161	42 882	81	46	23	4.7	0.6	10	5.7	10	69	
EMR	DOTS	56 052	60 001	107	72	11	3.6	1.6	7.2	2.4	2.4	83	19
	non-DOTS	3 656	3 568	98	25	32	2.4	1.1	21	12	6.4	57	
EUR	DOTS	23 394	24 460	105	60	17	5.8	7.1	5.8	2.8	1.8	77	8.9
	non-DOTS	17 390	16 776	96	28	43	4.6	5.2	6.9	2.4	9.3	72	
SEAR	DOTS	237 370	239 181	101	77	6.0	4.3	1.9	7.2	1.3	2.4	83	15
	non-DOTS	270 978	80 776	30	51	18	1.5	2.2	21	3.5	2.8	69	
WPR	DOTS	319 465	320 100	100	89	3.5	1.9	1.1	2.0	1.4	1.3	92 †	33
	non-DOTS	38 873	31 874	82	68	2.2	1.7	5.7	3.4	3.1	16	70	
Global	DOTS	990 057	1 025 286	104	74	7.9	4.4	1.5	6.5	3.2	2.2	82	23
	non-DOTS	412 281	206 561	50	49	18	3.1	2.7	14	5.4	8.0	67	

* See notes for Table 13a.

† Treatment success > 85%.

TABLE 15 **Treatment success for new smear-positive cases (%): high-burden countries, 1994-2000 cohorts†**

	DOTS PROGRAMMES							WHOLE COUNTRY						
	1994	1995	1996	1997	1998	1999	2000	1994	1995	1996	1997	1998	1999	2000
1 India	83	79	79	82	84	82	84	*	25	21	18	27	21	77
2 China	94	96	96	96	97	96	95	91	93	94	95	95	95	93
3 Indonesia	94	91	81	54	58	50	87	*	*	*	*	*	*	*
4 Bangladesh	73	71	72	78	80	81	83	*	*	63	73	77	79	81
5 Nigeria	65	49	32	73	73	75	79	*	*	*	*	*	*	*
6 Pakistan	74	70	—	67	66	70	74	69	*	—	*	23	*	*
7 South Africa	—	—	69	73	74	60	66	78	58	61	68	72	57	63
8 Philippines	80	—	82	83	84	87	88	88	60	35	78	71	*	*
9 Russian Federation	—	65	62	67	68	65	68	—	*	57	*	*	*	*
10 Ethiopia	74	61	73	72	74	76	80	*	*	71	*	*	74	*
11 Kenya	73	75	77	65	77	78	80	*	*	*	*	*	79	*
12 DR Congo	71	80	48	64	70	69	78	72	74	48	64	*	*	*
13 Viet Nam	91	91	90	85	93	92	92	*	89	89	85	92	92	*
14 UR Tanzania	80	73	76	77	76	78	78	*	*	*	*	*	*	*
15 Brazil	—	—	—	—	91	89	73	70	17	20	27	40	78	71
16 Thailand	—	—	78	62	68	77	69	58	64	*	58	*	*	*
17 Zimbabwe	—	—	—	—	70	73	69	52	53	32	69	*	*	*
18 Cambodia	84	91	94	91	95	93	91	*	*	*	*	*	*	*
19 Myanmar	—	66	79	82	82	81	82	77	67	79	*	*	*	*
20 Uganda	—	—	33	40	62	61	63	—	44	*	*	*	*	*
21 Afghanistan	—	—	—	45	33	87	86	—	—	—	*	*	86	85
22 Mozambique	67	39	54	67	—	71	75	*	*	55	65	—	*	*
High-burden countries	87	83	78	81	83	81	84	83	53	50	56	62	60	81
Global	77	79	77	79	81	80	82	75	57	54	60	64	64	80

† See notes for Tables 13a.

— Not available.

* No additional data beyond DOTS report.

TABLE 16 **Retreatment outcomes in DOTS programmes: high-burden countries, 2000 cohort***

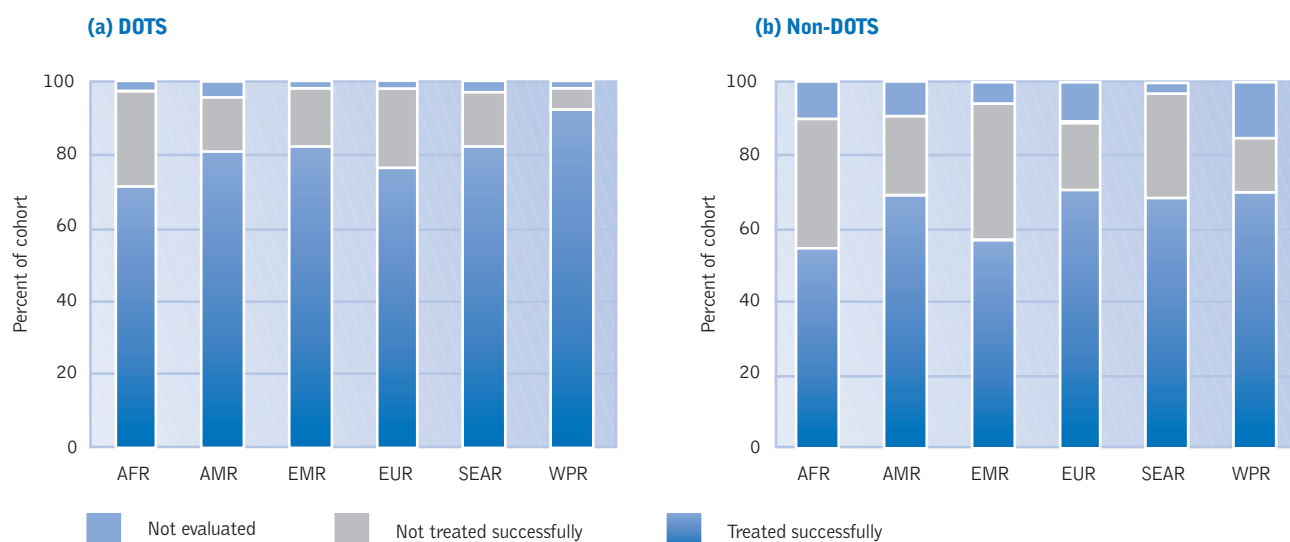
	TREATMENT OUTCOMES (%)*								TREATMENT SUCCESS (%)
	REGISTERED	CURED	COMPLETED TREATMENT*	DIED	FAILED	DEFAULTED	TRANS-FERRED	NOT EVAL'D	
1 India	45 263	56	15	7.1	5.3	16	0.6	0.3	71
2 China	43 252	86	2.2	1.2	1.1	0.6	0.4	8.0	89 †
3 Indonesia	2 530	50	22	3.0	3.3	6.6	1.8	13	72
4 Bangladesh	1 675	73	2.6	4.2	2.3	7.1	3.3	7.2	76
5 Nigeria	1 848	58	13	7.3	7.3	11	3.5	0.1	71
6 Pakistan	907	37	17	6.1	3.0	29	7.6	0.0	54
7 South Africa	22 076	44	7.4	8.2	2.4	20	17	0.6	52
8 Philippines	—	—	—	—	—	—	—	—	—
9 Russian Federation	1 694	25	24	10	21	8.9	11	0.0	49
10 Ethiopia	1 556	60	11	10	4.2	7.7	3.9	3.6	71
11 Kenya	1 964	65	11	2.1	7.9	9.6	4.5	0.0	76
12 DR Congo	—	—	—	—	—	—	—	—	—
13 Viet Nam	8 806	74	4.7	6.0	5.2	3.3	3.3	3.5	79
14 UR Tanzania	3 356	49	24	14	1.2	6.1	5.9	0.0	73
15 Brazil	622	42	1.3	3.7	0.2	17	3.2	33	43
16 Thailand	—	—	—	—	—	—	—	—	—
17 Zimbabwe	1 063	51	14	17	0.9	8.3	8.9	0.0	65
18 Cambodia	827	85	4.6	5.6	0.7	3.6	0.1	0.0	90 †
19 Myanmar	3 001	65	9.5	7.2	4.2	12	2.8	0.0	74
20 Uganda	1 209	34	30	13	0.4	13	6.0	3.5	64
21 Afghanistan	198	73	5.6	4.5	2.5	11	3.5	0.0	78
22 Mozambique	1 594	69	2.8	11	3.6	11	2.4	0.0	71
High-burden countries	142 378	64	9.2	5.6	3.5	10	3.9	3.4	74
Global	166 474	64	9.5	5.9	4.1	10	3.8	2.7	74

* See notes for Table 13a.

† Treatment success > 85%.

— Not available.

FIGURE 11 Treatment success in (a) DOTS and (b) non-DOTS areas, by WHO region, 2000 cohort



(49%). This poor performance is explained by the relatively low rate of evaluation (8% not evaluated), and the high rate of default (14%).

By WHO region, the documented treatment success rates under DOTS varied from 73% in Africa to 92% in the Western Pacific Region (Figure 11, Table 14). Fatal outcomes were most common in Africa (7%), where a higher fraction of cases are HIV-positive, and Europe (6%), where a higher fraction of cases occur among the elderly. Treatment interruption (default) was most frequent in the African (10%), Eastern Mediterranean (7%), and South-East Asia Regions (7%). Transfer without follow-up was also especially high in Africa (7%). Treatment failure was conspicuously high in the European Region (7%), mainly because of high failure rates in former Soviet countries (9%). Comparing treatment results for seven consecutive cohorts (1994–2000) shows that the overall success rates have remained approximately stable at 77–82% under DOTS (Table 15).

In DOTS areas, over 160 000 cases were registered for retreatment in 2000. The latest data give an overall treatment success rate of 74%. We expect more failures and deaths among patients being treated on a second or subsequent occasion, but the success rate is low in this cohort mainly because of the high default rate (10%, Table 16).

Progress in TB control in high-burden countries

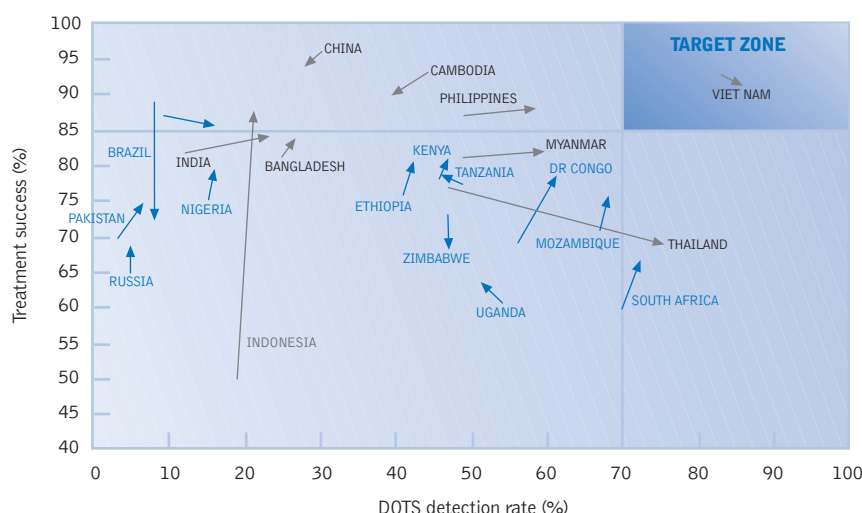
All 22 HBCs provided data on detection and treatment from DOTS programmes covering at least part of the country. Several widened their DOTS coverage. Among the countries that moved up to category 3 in 2001 were Brazil and Pakistan (Table 8a). The Philippines now has full coverage (category 4). Brazil, India, Pakistan, and

Thailand all improved coverage by more than 10%.

Viet Nam was still the only HBC to have reached both targets, but case detection rates were over 50%, and treatment success rates over 70%, in DR Congo, Mozambique, Myanmar, and the Philippines (Table 17). The arrows in Figure 12 depicting progress in DOTS implementation from 2000 to 2001 are typically short, reflecting small gains in

FIGURE 12 DOTS progress in high-burden countries, 2000–2001

Treatment success refers to cohorts of patients registered in 1999 or 2000, and evaluated, respectively, by the end of 2000 or 2001. The DOTS detection rate is the fraction of estimated cases notified under DOTS in 2000 or 2001. Arrows mark progress in treatment success and DOTS detection rate. Countries should enter the graph at top left, and proceed rightwards to the target zone. Countries from AFR, AMR and EMR are shown in blue, those from SEAR and WPR are shown in grey.



case detection and cure, though the recent progress in Myanmar and the Philippines pushes these two countries towards the target zone.

Treatment success under DOTS exceeded 80% in 11 HBCs, and the 85% target in six of these countries (Table 13a). It was under 70% in South Africa, the Russian Federation, Thailand, Uganda, and Zimbabwe. Indonesia reported the biggest improvement in treatment success between 1999 and 2000 (from 50% to 87%). This result was obtained, not by curing more patients, but rather by collating more

effectively the data on treatment outcomes. In the 2000 cohort, the fractions of cases not evaluated were significant only in Brazil (16%) and Thailand (12%).

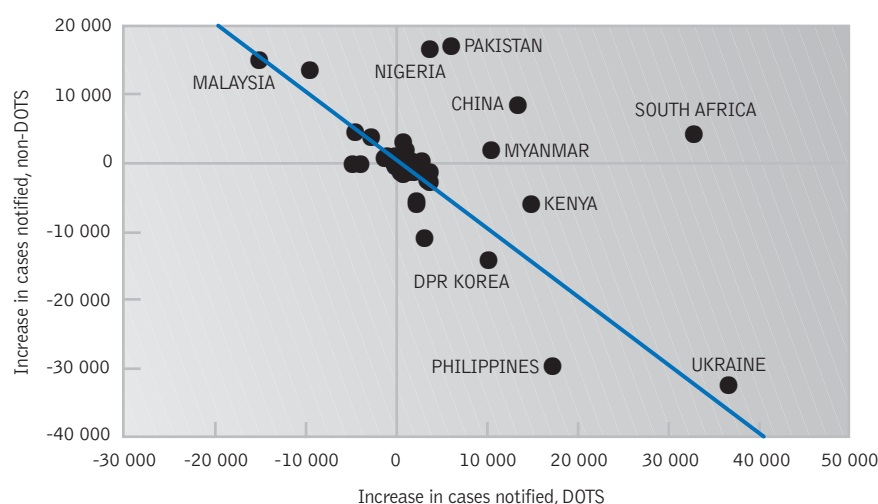
Two thirds (67%) of the additional smear-positive cases notified from all DOTS programmes in 2001, as compared with 2000, were in India. The extra cases reported from the Philippines, Myanmar, Thailand, Kenya, and Uganda contributed another 24% to the total increase. However, only the first three of these countries found a significantly greater fraction of new cases (Table 12).

Because the overall detection rate of smear-positive cases is low (42%), DOTS programmes are expected to recruit patients that would not have been notified outside DOTS areas. That is, we expect to see more patients added to DOTS programmes than have been added to or subtracted from non-DOTS programmes. In fact, data for 74 countries show that the gain in DOTS areas is offset by the loss from non-DOTS areas, and most of these countries cluster around the line of exact compensation (slope -1; Figure 13). The extreme example is India, which gained 197 000 smear-positive cases under DOTS in 2001, but lost 228 000 cases from non-DOTS areas. In other words, there was no net gain in reported cases. Nigeria, Pakistan, China, and South Africa did, however, report more cases in total, but they did so without significantly improving the DOTS detection rate (Table 12).

A fuller account of progress in each of the 22 HBCs can be found in Annex 3.

FIGURE 13 Increases in DOTS notifications at the expense of non-DOTS notifications

The graph shows the increase or decrease in numbers of cases (2000 to 2001) notified from DOTS and non-DOTS areas in 73 countries. The gains to DOTS programmes match losses to non-DOTS programmes on the line (slope = -1). India (not shown) gained 197 298 cases under DOTS, but lost 227 941 cases from non-DOTS areas.



Case detection versus coverage

A striking feature of DOTS expansion in the 22 HBCs is that the ratio of case detection to coverage has remained steady and, for many countries, well below 70% (Figure 14). There are few signs yet that case detection is increasing within DOTS areas as coverage expands: although we expect a time delay as cases detected (summed throughout the year) catch up with coverage (measured at the end of the year), the lines for the top nine HBCs in Figure 14 do not tend to curve up towards or cross the diagonal that represents 70% detection in DOTS areas (except South Africa). The same pattern appears when the data are aggregated for all smear-positive cases notified under DOTS worldwide, and all TB cases worldwide (Figure 15). Extrapolating the fitted regression line in Figure 15 suggests that the DOTS detection rate will be no more than 40–50% when coverage is nominally 100%.

TABLE 17 Progress in DOTS implementation: high-burden countries, 2000–2001

NON-DOTS OR INCOMPLETE DATA	DOTS				
	HIGH TREATMENT SUCCESS (≥70%)				
	LOW TREATMENT SUCCESS (<70%)	LOW CASE DETECTION* (<10%)	INTERMEDIATE CASE DETECTION (10–49%)	HIGH CASE DETECTION (≥50%)	
	Russian Federation	Brazil	Afghanistan	India	DR Congo
	South Africa	Pakistan	Bangladesh	Indonesia	Mozambique
	<u>Thailand</u>		Cambodia	Kenya	Myanmar
	Uganda		China	Nigeria	Philippines
	Zimbabwe		Ethiopia	UR Tanzania	Viet Nam

* DOTS detection rate: proportion of estimated smear-positive patients notified through DOTS programmes

Bold: countries that moved one or more categories up since 2000

Underline: countries that moved one or more categories down since 2000

FIGURE 14 DOTS detection rate in relation to DOTS coverage for the nine highest-burden countries

The diagonal lines represent 70% case detection within DOTS areas. For several DOTS programmes, the ratio of case detection rate to coverage (connected points) remains low as coverage expands.

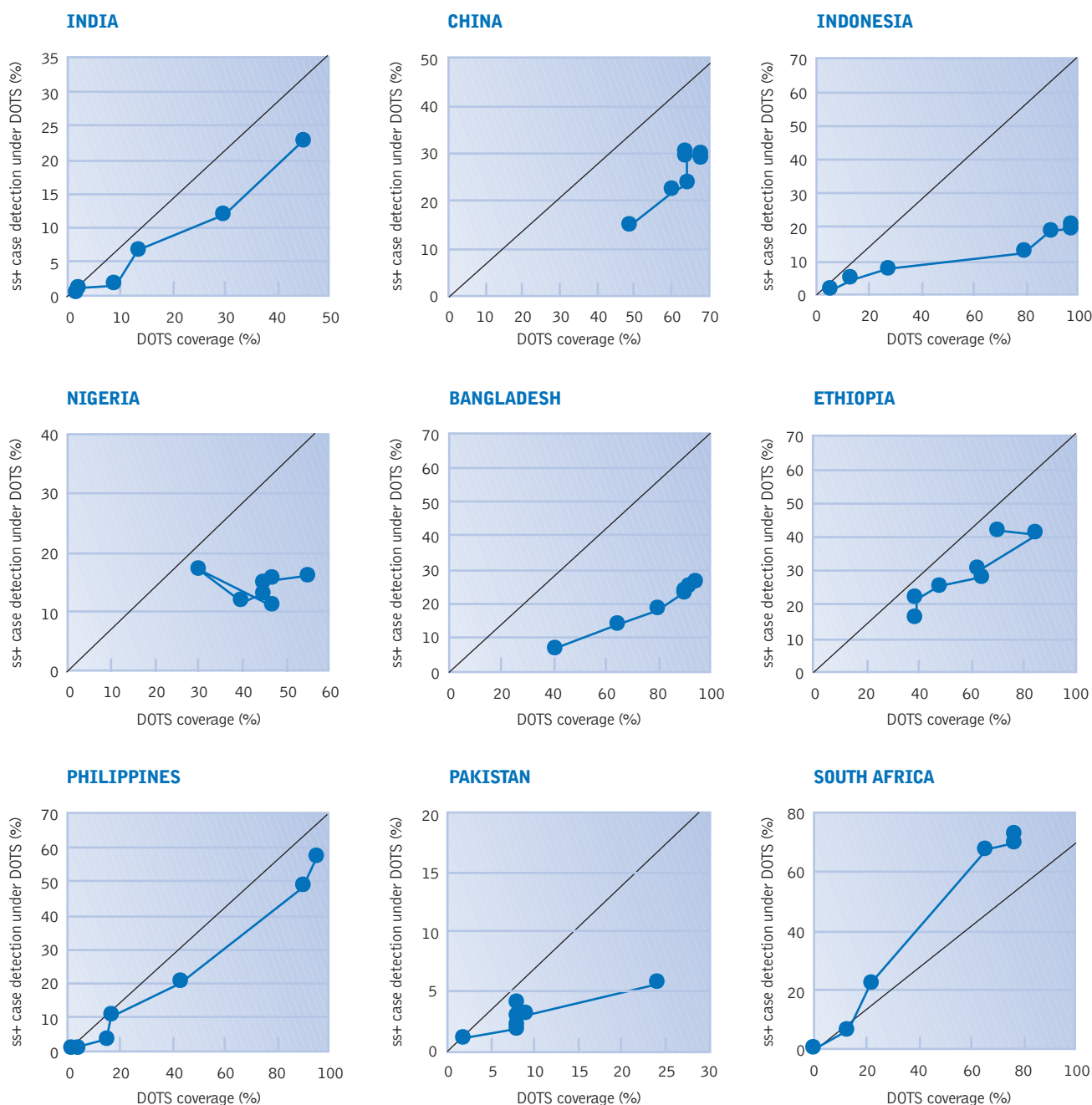


FIGURE 15 Case detection under DOTS in relation to DOTS coverage

As Figure 14, but with data aggregated for smear-positive cases in the 22 HBCs (grey circles), smear-positive cases globally (triangles), and all cases globally (blue circles). Fine lines are regressions fitted through the origin; extrapolations of these lines suggest that case detection rates will reach a maximum of 40-50% at 100% DOTS coverage. The heavy line shows the target of 70% case detection with 100% coverage

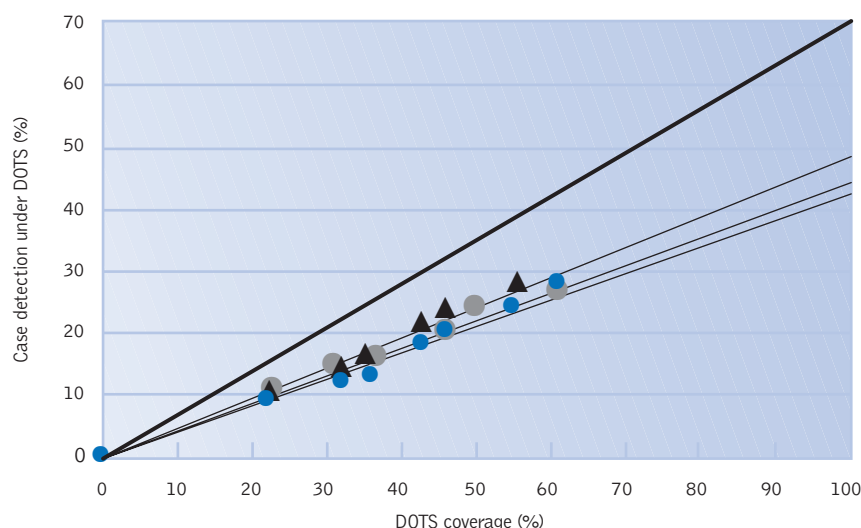
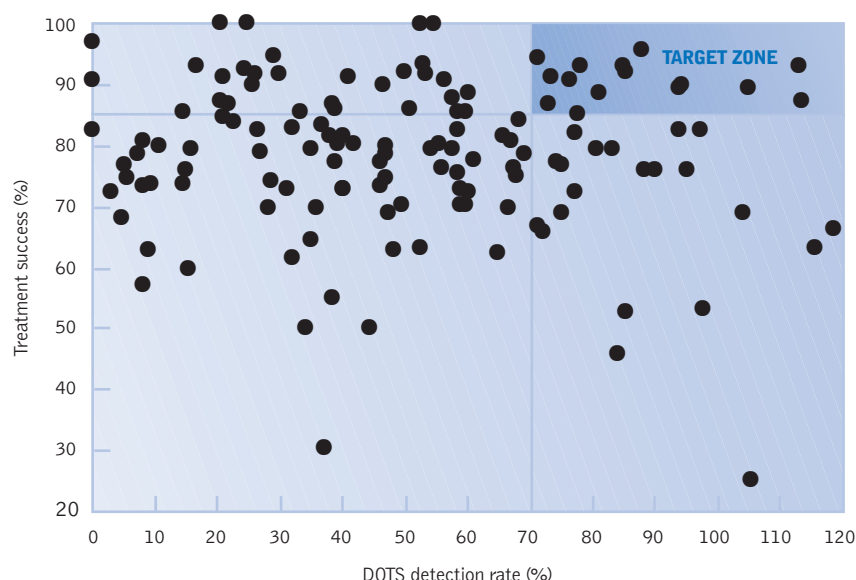


FIGURE 16 DOTS status in 2001

Estimated DOTS detection rate in 2001 and treatment success for the 2000 cohort in 137 countries reporting to WHO. The remaining DOTS countries have adopted the strategy too recently to provide treatment outcomes.



Progress in TB control in all DOTS countries

Data on treatment success and case detection were provided by 137 DOTS countries (Figure 16); in 54 countries (39%), DOTS detection and treatment success rates exceeded 50% and 70%, respectively (Figure 17). These countries appear to have reached, or are close to reaching, WHO targets, but together accounted for only 19% of all estimated TB cases in 2000. Fifteen countries, besides Viet Nam, appear to have met both WHO targets (Figure 17).

Of 124 countries that provided data for both 1999 and 2000 cohorts, 65 (52%) showed higher treatment success rates for the 2000 cohort; 27 (22%) improved DOTS detection by more than 5%. Annex 7 tabulates case detection and treatment success rates by country over the seven years for which we have data.

Planning for DOTS expansion in high-burden countries Implementation of national plans for DOTS expansion

In 2002, four more countries completed preparation of their medium-term plan and made it available to WHO, bringing the number of HBCs with plans to 20 out of 22 countries. Plans received from Afghanistan and the Russian Federation are comprehensive. China had a well-established plan for half of the country, and has now prepared a comprehensive plan to expand DOTS country-wide. The plan for Zimbabwe will need revision to include monitoring details. A plan for Mozambique is currently under development, and Thailand has yet to make its plan available to WHO. Following a programme review, Bangladesh revised its plan and its budget allocation for increasing case detection.

Nigeria, Pakistan, and Brazil developed plans in 2001 which they only began to implement in 2002. There was a lag between completion of the plans and implementation because these countries had first to secure political commitment and funds. The remaining 13 countries have been implementing their plans since 2001, with varying

degrees of success (Table 18, Annex 3).

The relationship between planning and implementation of DOTS for 19 of the 22 HBCs (excluding Thailand, Mozambique, and Zimbabwe) is shown in Table 16, from which three patterns emerge. First, nearly all countries that began to implement plans only recently (during 2002) also had, predictably, low DOTS coverage and very low DOTS detection rates in 2001. The exception is Nigeria, which has recently begun implementing a plan, even though DOTS has been established in parts of the country for several years.

Second, all 14 countries with established plans (implementation began in or prior to 2001) have either intermediate or high DOTS coverage, again with the exceptions of Nigeria and India.

Third, most countries with DOTS detection rates over 50% (DR Congo, Myanmar, the Philippines, South Africa, Uganda, Viet Nam), and hence at least intermediate coverage, also have established plans. However, the reverse is not

FIGURE 17 DOTS status in 2001: countries close to targets

Magnified view of Figure 16. 54 countries reported treatment success rates over 70% and DOTS detection rates over 50%. 16 countries (including Kiribati, out of range of graph) have reached targets.

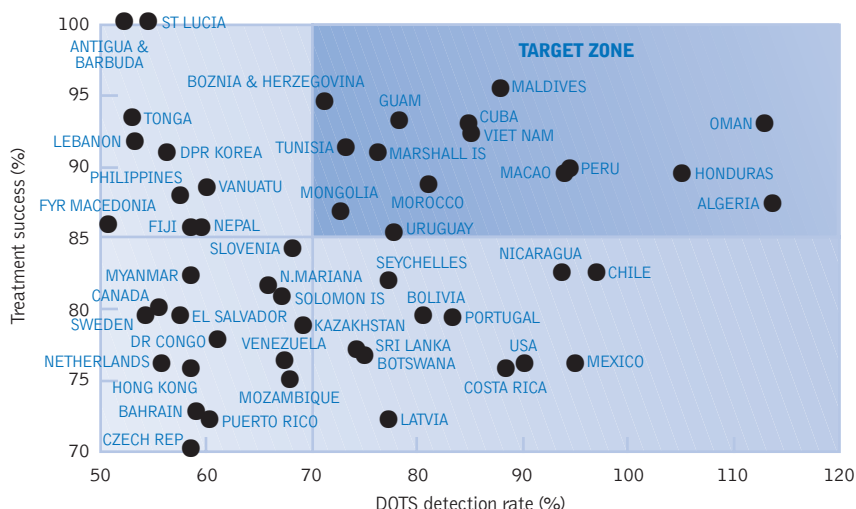


TABLE 18 Implementation status of DOTS expansion plan, DOTS coverage, and DOTS detection rate, by country

	PLAN STATUS (2002)		DOTS COVERAGE (% 2001)			DDR (% 2001)
	NEW PLAN (IMPLEMENTATION BEGAN 2002)	ESTABLISHED PLAN (IMPLEMENTATION BEGAN 2001 OR BEFORE)	LOW (< 50%)	INTERMEDIATE (50-90%)	HIGH (>90%)	
India		X	45			23
China		X		68		29
Indonesia		X			98	21
Nigeria	X			55		16
Bangladesh		X			95	26
Ethiopia		X		70		42
Philippines		X			95	57
Pakistan	X		24			6
South Africa		X		77		72
Russia	X		16			5
DR Congo		X		70		61
Kenya		X			100	47
Viet Nam		X			100	84
Tanzania		X			100	47
Brazil	X		32			8
Thailand	Plan not available to WHO			82		75
Uganda		X			100	52
Myanmar		X		84		59
Mozambique	Plan under development				100	68
Cambodia		X			100	41
Zimbabwe	Plan not yet implemented				100	47
Afghanistan	X		12			15

TABLE 19 **Constraints to reaching targets for case detection and cure in high-burden countries.**
Shaded columns indicate the five most important constraints.

	FINANCING	INFRASTRUCTURE	ACCESS TO DOTS	LABORATORIES	HUMAN RESOURCES	HIV/AIDS	COMMUNITY AWARENESS	PRIVATE SECTOR	DRUGS	POLITICAL COMMITMENT	MONITORING	DECENTRALIZATION DURING HEALTH SECTOR REFORM
India	x				x		x	x				x
China	x	x			x					x		
Indonesia					x			x	x		x	x
Nigeria	x	x	x		x							x
Bangladesh					x			x			x	x
Ethiopia		x			x					x		x
Philippines							x	x			x	
Pakistan					x			x				
South Africa				x	x	x				x		x
Russia	x		x						x			
DR Congo	x	x							x	x		
Kenya					x	x	x	x				
Viet Nam			x		x			x	x			
Tanzania		x			x			x				
Brazil										x	x	x
Thailand											x	x
Uganda				x	x	x						
Myanmar		x		x	x		x					
Mozambique					x					x		x
Cambodia			x		x	x	x					
Zimbabwe	x		x		x					x		
Afghanistan		x	x	x	x		x	x				
Totals	6	7	6	4	17	4	6	9	4	7	5	9

generally true: established plans have not yet been translated into high DOTS detection rates in all countries.

India is the most important exception to this scheme. Although the RNTCP has a well-established plan that has led to remarkable progress in DOTS expansion over the past four years, the 2001 data, showing coverage at 45% and DOTS detection rate at 23%, do not reflect this very recent progress. Thailand also reported big increases in the DOTS detection rate between 2000 and 2001, but we cannot tell whether this is associated with good planning.

Constraints to achieving targets and remedial actions

Twelve key constraints to reaching the global targets have been identified in the 22 HBCs (Table 19). Although the efforts in many countries are hampered

by nearly all of these constraints, the table shows the first hurdles that must be overcome to reach the targets.

Primary constraints to reaching targets in the HBCs

The five constraints most commonly identified concerned staff, decentralization, the private sector, infrastructure, and political commitment.

1. Lack of qualified staff: China, Ethiopia, India, Indonesia, Nigeria, Pakistan, South Africa, Tanzania, Uganda, and Zimbabwe report major deficiencies in staff at central level. Our analysis shows that, following decentralization, there has been inadequate planning for, and provision of, the kind of technical support that would enable staff at the provincial and district levels to successfully assume the new respon-

sibilities assigned to them. Afghanistan, Bangladesh, Cambodia, Kenya, Mozambique, and Myanmar have staff with inadequate qualifications working at the peripheral level. Viet Nam has a similar problem in remote areas. The solutions will include mechanisms to improve staff recruitment, retention, and motivation, secondments of staff from academic institutions, and better in-service and pre-service training.

2. Inadequate preparation for decentralization: Health sector reform, and especially the decentralization of TB control activities, was identified as a major constraint in Bangladesh, Brazil, Ethiopia, Indonesia, Mozambique, Nigeria, South Africa, and Thailand. District and provincial governments in these countries have not adequately participated in, and

funded, TB control. In India, peripheral management capacity in some states was affected by a lack of trained staff. By contrast, reform has provided opportunities in Cambodia and Kenya, where there is now the potential for better access to DOTS. Other countries did not experience major changes in the organization of their health systems during the period under review, but those with systems that were already decentralized, such as the Philippines, have found it hard to expand DOTS quickly because of the time needed to convince local authorities to participate. Possible solutions include the strengthening of central and provincial teams, and the provision of technical support to local health authorities. A programme review in Bangladesh, and meetings between members of the Stop TB Coordinating Board and senior decision-makers in Indonesia, have helped to maintain local commitment to TB control during decentralization.

3. Non-compliance of the private sector with the DOTS strategy: Although there are exceptions in parts of India and the Philippines, non-compliant and unregulated private practitioners are a major constraint to achieving the targets in Afghanistan, Bangladesh, India, Indonesia, Kenya, Pakistan, the Philippines, and Uganda, and to further increasing case detection in Viet Nam. Moves to involve NGOs and hospitals in DOTS should help to increase access. Four countries (India, Kenya, the Philippines, and Viet Nam) have begun Public-Private Mix (PPM) projects, but only the Philippines and India have begun to develop a plan to incorporate PPM into national policy.
4. Weak health infrastructure restricts access to health services: In Afghanistan, DR Congo, Ethiopia, Myanmar, and Nigeria, weak infrastructure is a major obstacle to achieving country-wide DOTS coverage. The war in Afghanistan destroyed the health infrastructure almost completely, and

the DOTS programme has had to begin anew. In DR Congo, DOTS is expanding only slowly into areas affected by war or civil unrest. Charging for treatment limits access, especially for the poorest patients, in China and Tanzania. Remedial actions proposed by countries include the re-building of health infrastructure, the use of community-based DOTS treatment, the admission of hospitals to the network of DOTS facilities, and the provision of free diagnosis and treatment for patients.

5. Political commitment: Steps have been taken by China to bring TB control into the government system by creating a new TB department in the Centres for Disease Control. This will help to strengthen commitment in provinces. However, countries including Brazil, DR Congo, Ethiopia, Mozambique, South Africa, and Zimbabwe require stronger moral and financial support for TB control. Remedial actions include: providing better support to local government following decentralization; forming provincial task forces; and expanding international support by mechanisms including high-level advocacy missions.

Additional constraints to reaching targets in the HBCs

Seven further constraints have been identified by various countries. They are, in brief:

1. Financing. China, DR Congo, India, Nigeria, the Russian Federation, and Zimbabwe all face problems with financing. Some of these countries lack money (Zimbabwe, DR Congo, Nigeria, the Russian Federation), and some have problems accessing and distributing funds from local or central governments (China, Nigeria, the Russian Federation). India's funding has an uncertain future.
2. Access to DOTS. Certain people living in Afghanistan, Cambodia, Nigeria, the Russian Federation, and Zimbabwe have poor or limited

access to DOTS. Poor infrastructure limits access in Afghanistan; Cambodia has limited access at the periphery; Nigeria only delivers DOTS in selected health centres; the Russian Federation has not integrated DOTS into the primary health care system; Viet Nam has poor access in remote areas only; Zimbabwe has low access mainly in new settlements.

3. Laboratories. Progress in Afghanistan, Myanmar, South Africa, and Uganda is constrained either by poor laboratory quality control, or by the lack of a laboratory network, or by unequal access to laboratory services.
4. TB/HIV co-infection. HIV has been identified as one of the main constraints to TB control in Cambodia, Kenya, South Africa, and Uganda. In these countries, NTP's are developing plans to collaborate effectively with HIV/AIDS programmes. Although there are other countries with high rates of HIV infection, they have more pressing constraints that must be attended to first.
5. Community awareness. Weak public awareness hampers efforts to detect and treat TB suspects in Afghanistan, Cambodia, India, Kenya, Myanmar, and the Philippines.
6. Drug supply. DR Congo, Indonesia, the Russian Federation, and Viet Nam have indicated difficulties in implementing drug quality control, or in assuring regular supply and distribution of drugs throughout the country. To help alleviate drug shortages, the Global Drug Facility approved drugs for 10 countries in 2002 (Bangladesh, DR Congo, India, Indonesia, Kenya, Myanmar, Nigeria, Pakistan, the Philippines, and Uganda). As a result, all HBCs have a secure supply of TB drugs for 2002. With the exception of parts of Afghanistan, China, Nigeria, and Pakistan, drugs will be supplied free of charge to all patients treated in the public sector.
7. Monitoring. Recording and reporting

remain weak or fragile in Bangladesh, Brazil, Indonesia, the Philippines, and Thailand.

Partnerships and coordination

Coordination of partners' activities has been improved through discussion within and between three working groups of the Stop TB Partnership: those for DOTS expansion, TB-HIV, and MDR-TB. All regions improved coordination between their respective regional partners, using mechanisms such as regional ICCs, task forces, and meetings of interested parties. NICCs have now been meeting regularly in all but four countries (India, Mozambique, South Africa, and Thailand), a remarkable increase from the 11 NICCs that were in place just a year ago. In countries applying to the GFATM, a well-established NICC

serves as a model for organizing the Country Coordination Mechanism (CCM) required by the Fund. In some countries, the NICC for TB remains as a sub-committee of the CCM.

Financing DOTS expansion in high-burden countries Revised estimates of funding gaps for 2001-2005

The new funding commitments made since March 2002 total US\$ 245 million (Table 20). The principal sources of these new funds have been the GFATM (US\$ 130 million for 2003-2005 and US\$ 178 million for all years, to six HBCs) and a World Bank/DFID loan and grant package for China (US\$ 66 million for 2002-2005 and US\$ 104 million over the ten year project period). A second World Bank loan of US\$ 150 million is likely to be approved in mid-

2003 to combat TB and HIV/AIDS in the Russian Federation. CIDA has donated US\$ 15 million for projects aimed at identifying new strategies for increasing case detection rates. This is an important contribution because previous investments in this area have been far too small (US\$ 24 million over five years in all 22 HBCs).³

China, Ethiopia, and Indonesia stand out as beneficiaries of the new funding, having received US\$ 184 million (75%) of the total of US\$ 245 million. Indonesia has closed its identified funding gap completely.

Several countries with large funding gaps have received relatively little or no new funding. These include India, Pakistan, Nigeria, Bangladesh, South Africa, DR Congo, Kenya, Myanmar, and Zimbabwe. This is likely to change because some of these countries have

TABLE 20 **New funding for high-burden countries pledged since March 2002, and consequent changes in funding gaps for the period 2001-2005, US\$ millions**

	GFATM 2003-2005 (TOTAL FOR FUNDING PERIOD) ¹	WORLD BANK 2002-2005 (TOTAL FOR FUNDING PERIOD) ¹	BILATERAL DEVELOPMENT AGENCIES	GDF	ALL SOURCES	IDENTIFIED GAP		POSSIBLE GAP	
						MARCH 2002	DECEMBER 2002	MARCH 2002	DECEMBER 2002
1 India	9	—	—	—	9	3	—	100	94
2 China	37 (48)	66 (104) (WB/DFID) ²	1	—	104	221	117	—	—
3 Indonesia	54 (71)	—	4	1	59	50	—	—	—
4 Bangladesh	—	—	1	1	2	—	—	36	34
5 Nigeria	—	—	1	—	1	—	—	72	71
6 Pakistan	—	—	2	—	2	15	13	77	77
7 South Africa	—	—	—	—	—	—	—	268	268
8 Philippines	—	—	10	1	11	25	14	—	—
9 Russian Federation	—	— ³	—	—	—	—	—	51	51
10 Ethiopia	15 (27)	—	6	—	21	0	0	75	54
11 Kenya	—	—	1	—	1	7	6	96	96
12 DR Congo	—	—	0.5	—	0.5	36	35	18	18
13 Viet Nam	5 (10)	—	—	—	5	2	—	4	1
14 UR Tanzania	—	—	—	—	—	1	1	16	16
15 Brazil	—	—	1	—	1	—	—	—	—
16 Thailand	10 (13)	—	—	—	10	—	—	—	—
17 Zimbabwe	—	—	—	—	—	—	—	52	52
18 Cambodia	—	—	2	—	2	10	8	—	—
19 Myanmar	—	—	—	—	—	10	10	—	—
20 Uganda	—	—	1	—	1	6	5	6	6
21 Afghanistan	—	—	2	—	2	11	9	—	—
22 Mozambique	—	—	—	—	—	—	—	—	—
Country-specific sub-total ⁴	130 (178)	66 (104)	31	3	230	397	219	871	838
Non-country specific ⁵	—	—	15	—	15	—	—	—	—
TOTAL	130 (178)	66 (104)	46	3	245	397	219	871	838

¹ Where funding period extends beyond 2005.

² Listed as WB/DFID because the new funding is a novel package consisting of both a loan and a grant. DFID is providing grant funds of UK£ 28 million over 10 years to assist with interest payments on the loan (see also Methods section).

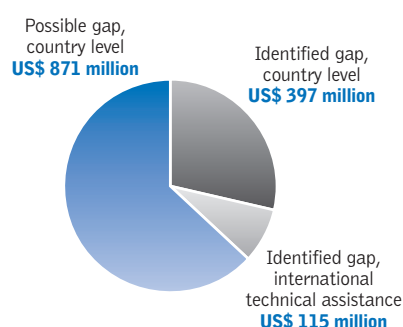
³ A World Bank loan of US\$ 150 million for TB and HIV/AIDS is expected to be approved in 2003.

⁴ Sub-total may differ from sum of totals due to rounding errors.

⁵ The US\$ 15 million is a grant from CIDA for pilot projects to develop new strategies for increasing case detection. CIDA has announced a commitment of C\$ 80 million for TB control for the next four years. Only US\$ 15 million is shown in the row for non-country specific funding because to date this is the funding that has been allocated specifically for support to TB control in HBCs.

— Indicates zero.

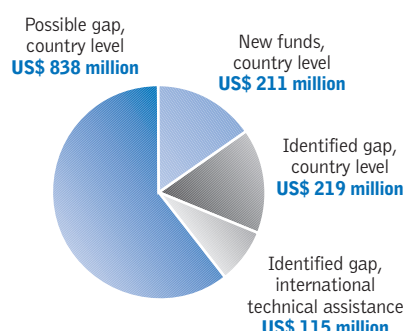
FIGURE 18 Funding gap for 2001-2005 in March 2002: 22 HBCs, US\$ millions



proposals currently under consideration by the GFATM.

The impact of the new funding commitments made since March 2002 is summarized in Figures 18 and 19. The total gap of US\$ 1.4 billion in March 2002 was made up of US\$ 397 million identified at country level, another US\$ 871 million possibly required at country level, and US\$ 115 million for

FIGURE 19 New funds and remaining funding gaps for 2001-2005 in December 2002: 22 HBCs, US\$ millions



international technical assistance (Figure 18). New funds of US\$ 211 million filling identified or possible gaps have reduced the deficit at country level by almost 50%, to US\$ 219 million (Figure 19). However, financing to close the possible gaps has been relatively small at only US\$ 33 million (4%), and there has been no additional support for international technical assistance.

On top of the US\$ 211 million (Figure 19), there are some new funds that are not yet tied to specific budget gaps. These include the US\$ 15 million from CIDA, which has yet to be allocated to specific countries, US\$ 9.5 million for Thailand from the GFATM, US\$ 8.5 million for Indonesia, and US\$ 1 million for Brazil from USAID.

Funding requirements and expected funding gaps for 2003

Availability of budget data

Only 10 NTPs provided data on the standard data collection form distributed by WHO. For an additional two countries (Ethiopia and Myanmar), the form was completed by consultants during country visits in late 2002. Except for Viet Nam, which returned the standard data collection form, data for countries located in the Western Pacific Region (Cambodia, China, the Philippines) were derived from information prepared in a different format for an international conference. For Mozambique, Nigeria, and Zimbabwe, data were

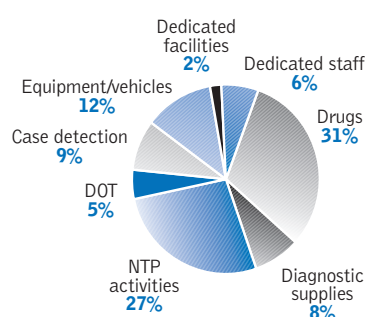
TABLE 21 NTP budgets, funding gaps, and total TB control costs: high-burden countries, 2003

	TB CONTROL COSTS			DATA SOURCE ¹	
	NTP BUDGET US\$ MILLIONS	FUNDING GAP US\$ MILLIONS	TOTAL (INCL. INFRASTRUCTURE) US\$ MILLIONS	NTP BUDGET	INFRASTRUCTURE COSTS
1 India	35.6	0	100.6	WHO survey	WHO estimates
2 China	94.8	9.5	94.8	WPRO	WHO estimates
3 Indonesia	22.7	0	36.5	WHO survey	WHO survey form
4 Bangladesh	6.3	2.9	25.3	WHO survey	WHO estimates
5 Nigeria	10.8	5.7	21.8	GFATM	WHO estimates
6 Pakistan	5.4	0.8	21.9	WHO survey	WHO estimates
7 South Africa	ne	ne	230	ne	WHO estimates
8 Philippines	9.1	5.8	22.3	WPRO	WHO estimates
9 Russian Federation	200	ne	200	ne	WHO estimates
10 Ethiopia	8.4	0.2	10.4	WHO survey	WHO survey form
11 Kenya	8.4	2.7	16.4	WHO survey	WHO estimates
12 DR Congo	10.7	5.4	15.7	WHO survey	WHO estimates
13 Viet Nam	8.1	0	17.9	WHO survey	WHO survey form
14 UR Tanzania	4.5	ne	10	ne	WHO estimates
15 Brazil	16.6	5	53.6	WHO survey	WHO estimates
16 Thailand	14.1	3.5	25.1	WHO survey	WHO estimates
17 Zimbabwe	4.4	2.5	22	GFATM	WHO estimates
18 Cambodia	4.9	0.8	9.9	WPRO	WHO estimates
19 Myanmar	3.1	2.1	ne	WHO survey	ne
20 Uganda	2.4	0	7.9	WHO survey	WHO estimates
21 Afghanistan	2.8	0	ne	WHO survey	ne
22 Mozambique	8	5.3	ne	GFATM	ne
Total	481.1	52.2	942.1		

ne Indicates not provided and/or not estimated.

¹ WHO survey: information collected as part of project for Global Financial Monitoring of TB Control (form in annex 3), WHO estimates: see description in Methods section.

FIGURE 20 Budget shares for specific line items: 22 HBCs, 2003



derived from information supplied in GFATM applications. For Pakistan, data were available from a recently completed five-year plan and budget. Thus, data were available for a total of 19 HBCs (Table 21).

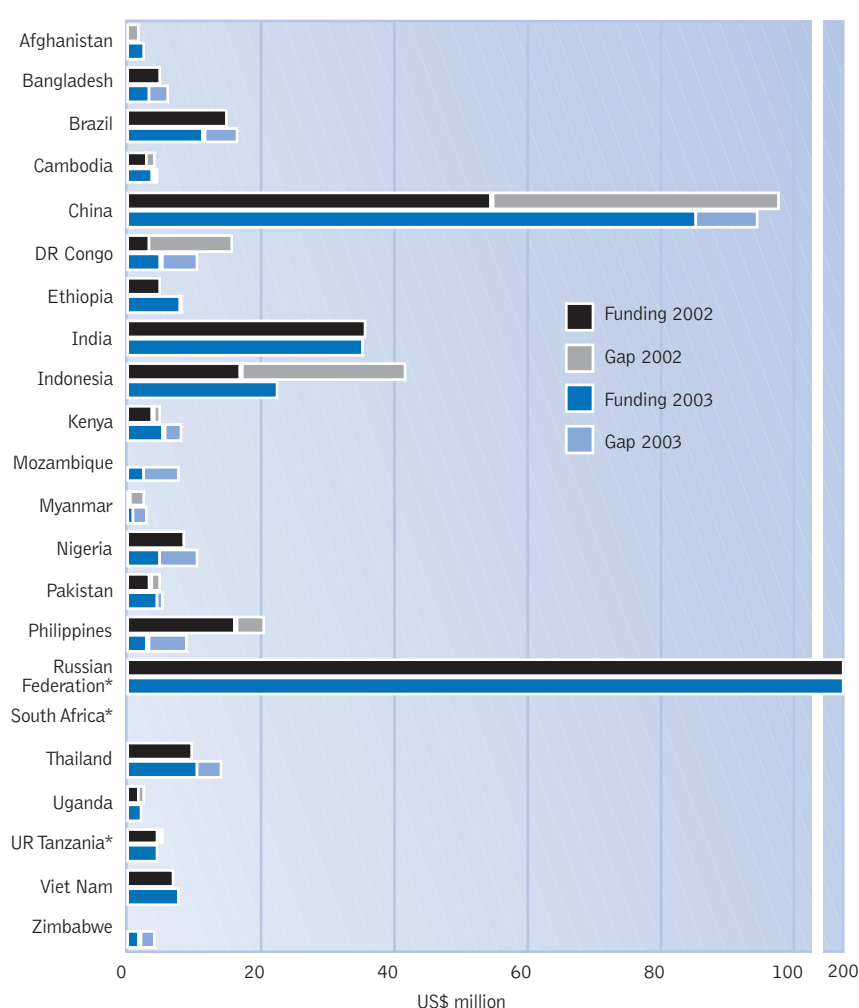
The three HBCs for which no data were available for 2003 were the Russian Federation, South Africa, and Tanzania. For the Russian Federation and South Africa, we used the budget and cost estimates made for these

countries in 2002. The budget for Tanzania was derived from the five-year plan provided last year. No information on funding gaps and government contributions can be provided for these three countries.

Information for specific budget categories

The overall distribution of budgets to line items for the 19 HBCs are shown in Figure 20. For 17 countries, the budgets included specific amounts for activities to increase case detection. Only eight countries specified budgets for activities related to the supervision of treatment. Budget figures for dedicated staff were provided by seven countries; budgets for dedicated facilities were included by only four countries. Five countries described funding gaps for dedicated staff, and two countries had gaps for dedicated facilities.

FIGURE 21 NTP budgets and funding gaps: 22 HBCs, 2002 & 2003



* Data on resource availability and funding gaps not available for the Russian Federation (2002 and 2003) and UR Tanzania (2003). Budget data not available for South Africa.

Annual budgets and funding gaps for 2003

The total identified budget for 2003 (US\$ 481 million) is similar to the annual average calculated in 2002 (US\$ 486 million), although the 2003 total includes two countries (Mozambique and Zimbabwe) that had no data in 2002 (Table 21). Budgets for 2003 were less than those for 2002 in six countries, but greater in 10 others (Figure 21, 22). The reported budget requirements were essentially unchanged for Cambodia, China, and India.

The total of all reported funding gaps for NTP budgets (US\$ 52 million; Table 18) is less than the estimate derived from the average annual figures for 2001–2005 (at least US\$ 81 million). Eight countries reported a reduction of their funding gap, of which three (Afghanistan, Indonesia, Uganda) anticipate no deficit for 2003. Only two countries (Kenya, the Philippines) described a larger funding gap than reported for 2002.

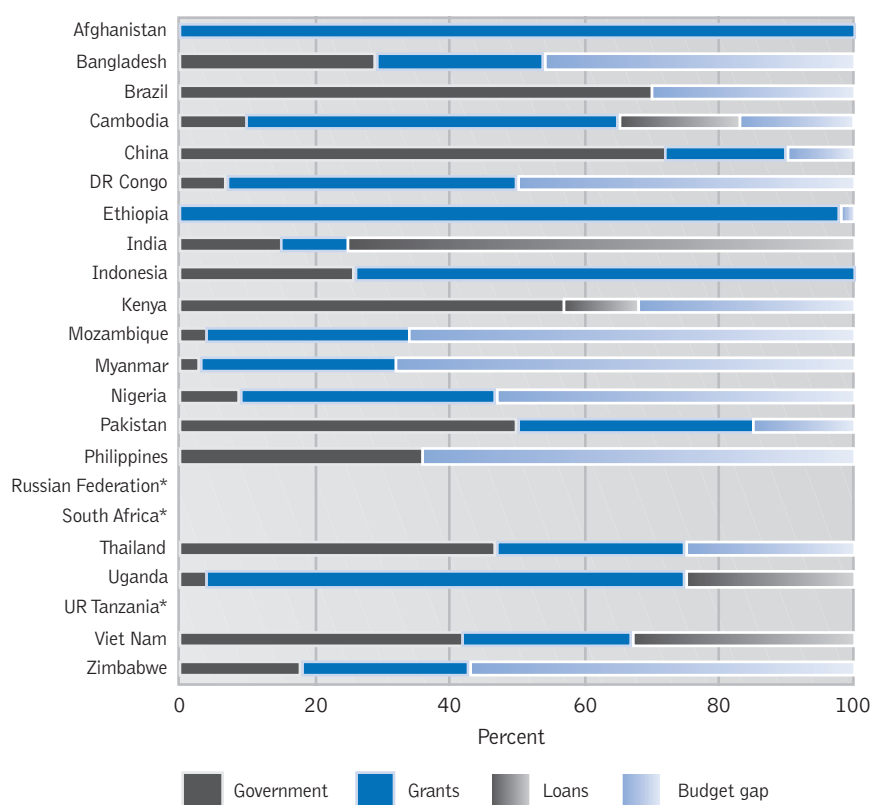
Total cost of TB control, including costs imposed on general health services

Information on the costs of using general health infrastructure for TB control was provided by only three countries (Ethiopia, Indonesia, and Viet Nam). For Ethiopia, the estimate for 2003 was substantially less than the previous estimate for 2002.³ For Viet Nam, the 2003 estimate is marginally greater than the 2002 estimate. For an additional 18 HBCs, previously-estimated infrastructure costs were used unchanged in the present analysis. No estimates of infrastructure costs were made for Afghanistan, Mozambique, and Myanmar in 2002, and we excluded such costs from our analysis for 2003. With these assumptions, the estimated total cost of TB control, including NTP budgets and infrastructure costs, is US\$ 942 million for 2003, similar to the figure of US\$ 976 million calculated for 2002 (Table 21).

Unit costs

NTP budgets per case varied from US\$ 26 (India) to US\$ 1049 (the Russian Federation). Total costs per case (including health infrastructure costs) varied between US\$ 53 (Ethiopia) and US\$ 1380 (South Africa). Average cost figures for all HBCs are similar to those reported in 2002. We also calculated per capita costs for TB control based on the total population size of individual countries, and we calculated the relative economic burden from TB control activities by relating TB costs to GDP per capita.¹² Total costs per capita were lowest in China (US\$ 0.07) and highest in South Africa (US\$ 5.31), while the proportion of per capita GDP used for TB control was lowest in China (0.009 %) and highest in Cambodia (0.32%). If the costs of treating one case for TB are related to the average GDP per capita, these relative costs are lowest in the Philippines (12% of GDP per capita) and highest in Cambodia (109% of GDP per capita) (Table 22).

FIGURE 22 NTP funding sources and budget gaps: 22 HBCs, 2003



* Detailed budget and funding data not available for the Russian Federation, South Africa, and UR Tanzania.

TABLE 22 TB budgets and total costs per case, per capita, and compared to GDP: high-burden countries, 2003

	NTP BUDGET		TOTAL COST		
	PER CASE	PER CASE	PER CAPITA	AS PROPORTION OF GDP	PER CASE AS PROPORTION OF GDP PER CAPITA
	US\$	US\$	US\$	%	%
1 India	26	72	0.10	0.02	15
2 China	121	121	0.07	0.01	14
3 Indonesia	107	172	0.17	0.02	24
4 Bangladesh	33	132	0.18	0.05	37
5 Nigeria	77	156	0.19	0.06	45
6 Pakistan	27	109	0.16	0.04	26
7 South Africa	ne	1 380	5.31	0.18	47
8 Philippines	47	116	0.29	0.03	12
9 Russian Federation	1 049	1 049	1.37	0.08	61
10 Ethiopia	43	53	0.17	0.16	52
11 Kenya	55	107	0.53	0.16	32
12 DR Congo	98	144	0.31	0.05	26
13 Viet Nam	87	193	0.23	0.06	48
14 UR Tanzania	47	104	0.28	0.14	51
15 Brazil	225	727	0.31	0.01	23
16 Thailand	267	475	0.40	0.02	24
17 Zimbabwe	66	328	1.74	0.30	56
18 Cambodia	128	258	0.76	0.32	109
19 Myanmar	85	ne	ne	ne	ne
20 Uganda	47	155	0.34	0.13	61
21 Afghanistan	84	ne	ne	ne	ne
22 Mozambique	163	ne	ne	ne	ne

ne Indicates not provided and/or not estimated.

TABLE 23 **Government contributions to TB control costs, high-burden countries, 2003***

	GOVERNMENT CONTRIBUTION		PROPORTION OF GOVERNMENT HEALTH EXPENDITURE USED FOR TB
	TO AVAILABLE	TO TOTAL COSTS	
	NTP BUDGET	OF TB CONTROL	
	%	%	%
1 India	90	97	1.7
2 China	80	72	0.3
3 Indonesia	26	54	2.1
4 Bangladesh	53	82	3.0
5 Nigeria	20	55	6.3
6 Pakistan	59	88	3.3
8 Philippines	100	74	1.4
10 Ethiopia	0	19	1.6
11 Kenya	88	79	6.3
12 DR Congo	13	36	1.7
13 Viet Nam	75	89	3.1
15 Brazil	100	91	0.3
16 Thailand	62	70	0.7
17 Zimbabwe	42	84	8.0
18 Cambodia	34	65	9.0
20 Uganda	29	78	6.3

* This table lists only those countries for which information on government contributions is available or estimated.

Summary indicators

Government contributions to budgets vary widely, from 0% in Afghanistan, to 100% in Brazil (no donor support expected in 2003) and the Philippines (no donors identified) (Figure 22). Government contributions to the total costs of TB control show less variation and generally exceed 50% of the total costs. The reason is that governments make a significant contribution through the provision of health infrastructure (i.e. staff and facilities). The estimated government contributions to total costs are less than 50% in only two countries, Ethiopia and DR Congo. The estimated share of total government health expenditures used for TB control varies from 0.3% (Brazil) to 9.0% (Cambodia) (Table 23).

Discussion

Progress in global TB control

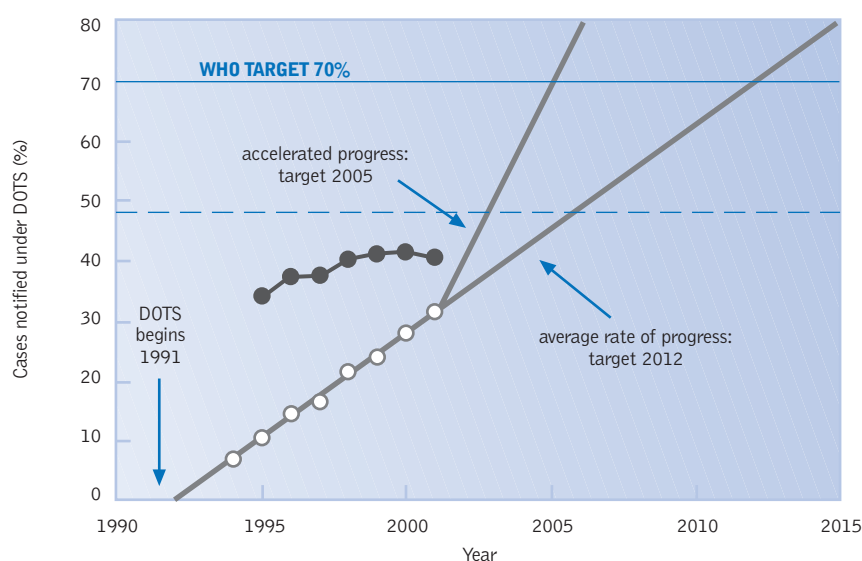
Trends in case notifications suggest that the global incidence of TB is growing, albeit slowly (0.4%/year). This static picture conceals much more rapid growth in sub-Saharan Africa linked to the spread of HIV, and in countries of the former Soviet Union due to the deterioration of public health, and of public health services. Incidence continues to decline in Western and Central Europe and in other industrialized countries, and more slowly in Latin America and the Middle East. The number of new TB cases is apparently changing little from year to year in the South-East Asia and Western Pacific Regions, where the caseload is greatest.

The DOTS strategy has been the principal response to the global TB epidemic for the past decade. By the end of 2001, DOTS had been adopted by 155 countries and was, in the collective judgement of national TB control programmes, available to 61% of the world's inhabitants. More than ten million patients were diagnosed by DOTS programmes between the start of 1995 and the end of 2001, of which over five million were smear-positive. During 2001, the most recent year for which we have reports, well over two million new TB patients were notified under DOTS, including more than one million smear-positives.

Despite the enormous number of patients that have been successfully treated under DOTS, only 32% of all estimated smear-positive cases were diagnosed and reported by DOTS programmes during 2001, far below the 70% target. The increment in case detection between 2000 and 2001 (137 000 cases) was about the same as the average increment each year since 1995. If this rate of progress is maintained, the global target will not be reached until 2012 (Figure 23).

FIGURE 23 Progress towards the 70% case detection target

Open circles mark the number of smear-positive cases notified under DOTS 1994–2001, expressed as a percentage of estimated cases for each year. The solid line through these points indicates the current average annual increment of about 137 000 new cases, which intersects the target in year 2012; the steeper line represents a higher annual increment of approximately 360 000 cases, and reaches the 70% target by 2005. Closed circles show the total number of smear-positive cases notified (DOTS and non-DOTS) as a percentage of estimated cases. The dotted line marks the average smear-positive case detection rate within DOTS areas (Figure 15), and represents a possible ceiling to the global DOTS detection rate.



We have made essentially the same forecast each year since 1999. However, there are two reasons why progress over the next few years might actually be slower. First, most of the recent progress in case detection has been made in just a few countries. India alone accounted for two thirds (67%) of the additional smear-positive cases notified globally under DOTS during 2001. If coverage had not improved in India, the global DOTS detection rate would have increased by only 0.7% instead of 3.5% between 2000 and 2001. Myanmar, the Philippines, Thailand, Kenya, and South Africa together accounted for a further 24% of the additional cases detected. However, only in the first three of these countries was a significantly higher fraction of cases detected. The increase in

the number of cases reported by the two African countries probably reflects an increase in the underlying incidence of TB associated with the spread of HIV. Although Brazil and Pakistan reported increases in DOTS coverage between 2000 and 2001, they have not yet diagnosed and treated many more patients. If we are to reach the 70% target globally, these and other HBCs must markedly improve case detection.

Second, the case detection rate within DOTS areas appears to be steady at just under 50%, as judged by the constant ratio of detection to coverage. If this ratio remains unchanged as DOTS programmes expand, no more than half the estimated smear-positive cases will be detected when DOTS programmes achieve full coverage (i.e. assuming

coverage continues to be measured in the same way) (Figure 23). In fact, surveillance data indicate that the detection rate of smear-positive cases from all sources (DOTS and non-DOTS) appears to have reached a maximum of only 40%; the gains made under DOTS between 2000 and 2001 did not add to the total number of smear-positive cases reported. As we have observed in previous years, DOTS programmes tend to recruit patients that would already have been reported to the public health services. The implication is that, to reach even 50% case detection, programmes must recruit and accurately diagnose a larger fraction of smear-positive patients in new DOTS areas.

The reasons why DOTS detection rates are low vary from one country to another. Elsewhere¹⁷ we have classified patients that have not been detected under DOTS into five non-exclusive groups. They are, in brief:

1. The missing cases do not exist. It is possible that incidence of TB has been overestimated in some countries. This may well be a conclusion of the 2002 Cambodian prevalence survey, the results of which will be published in 2003.
2. Patients do not present to any health facility, public or private. TB patients are bound to be missed in some countries, such as Ethiopia, where a large fraction of the population does not have access to formal health services.
3. Patients are diagnosed and treated in the private sector, and not notified to public health services (and therefore do not appear in national health statistics). A series of studies in India has shown that over half of all TB patients first visit, and are first treated by, private practitioners.
4. Patients present to the public health system, but not to DOTS programmes. In 2001, 1.4 million TB

patients were reported from outside DOTS programmes, including 421 000 that were smear-positive. These figures almost certainly understate the number of patients treated by non-DOTS public health services around the world.

5. Patients present to the public health system, including DOTS programmes, but are wrongly diagnosed or not reported. During 2001, the Russian Federation reported 14 531 new patients from DOTS areas, of which only 4079 were smear-positive.

By contrast with case detection, treatment success under DOTS is high on average, and close to the 85% target, though treatment outcomes remain poor in some areas, notably in sub-Saharan Africa and in countries of the former Soviet Union. In Africa, the fractions of DOTS patients dying (7%), defaulting (10%), or transferring to other treatment centres without follow-up (9%), were greater than in any other WHO region. As a result, treatment success is well below target in Africa (73%). HIV/AIDS appears to be only part of the explanation for poor programme performance. In former Soviet countries, death (5%) and default rates (6%) were high, but failure was still greater (9%). Many of these countries have high rates of drug resistance, and merely completing treatment (8%) is no guarantee of cure. Bacteriological confirmation of cure is therefore highly desirable.

The solutions to all of these problems of detecting, diagnosing, and treating patients, and of reporting the outcomes, will need to be as diverse as the problems. The main difficulties associated with planning, financing, and implementing DOTS are discussed below, together with some possible remedial actions.

Clearly, understanding the problems in each country is a prerequisite to solving them. The analysis of aggregated national surveillance data presented in this report highlights some of the weaknesses in TB control, but a much better appreciation would come from similar analyses carried out on data divided by

geographic area (provinces, districts, and counties within countries), and disaggregated for groups that have different risks of TB infection and disease (according to age, sex, ethnicity, occupation, HIV infection, etc). A large body of such data already exists in many countries, but remains unanalysed.

Planning for DOTS expansion in high burden countries

Better planning should lead to wider DOTS coverage and improved case detection, but the transition from planning to implementation in the HBCs has been slower than anticipated.

Twenty of the 22 HBCs have adequate plans for DOTS expansion. Unsurprisingly, there is a positive association between planning and implementation. Though we cannot prove that good planning is either a necessary or sufficient condition for sound implementation, it is reasonable to assume that it plays a part. Countries which have only recently planned for DOTS expansion had low coverage and case detection at the end of 2001. At the other end of the spectrum, countries with high DOTS detection rate have well-established plans.

The observation that the reverse is not necessarily true – well-established plans are not always matched by high rates of case detection – could be explained by the inevitable time delays between planning and implementation, and between implementation and the analysis of outcomes. In the first instance, there are delays as NTPs try to secure political commitment, obtain funds, develop infrastructure, and hire staff. In the second instance, the surveillance data are analysed with a further time delay of one year, so it is impossible to see the immediate impact of planning on progress towards targets. When the 2002 surveillance data are analysed towards the end of 2003, we should see improvements in case detection for countries where plans were implemented in 2002.

We expect to see large-scale improvements in programme performance only after many of the country plans

¹⁷ Dye C, Watt CJ, Bleed DM, Williams BG. What is the limit to case detection under the DOTS strategy for tuberculosis control? *Tuberculosis* (in press).

have been more fully implemented in 2003. If marked improvements in coverage and case detection do not follow until 2004, the prospect of reaching global targets by the end of 2005 seems remote.

The HBCs found in 2002 that the biggest constraint to good planning and implementation is the lack of qualified staff. The problem is closely tied to the disruptive process of health service decentralization. It is exacerbated particularly by non-compliance with the DOTS strategy in the private sector, physical weaknesses in health infrastructure, and by a lack of political commitment to TB control. Decentralization has, in many countries, led to reductions in the number of staff employed at central and at intermediate levels. These reductions have been made without strengthening personnel at district level or other peripheral levels. The restructuring has also stretched financial resources, so that programme managers have been distracted from implementing plans by the need to raise funds. It is clear that, in many countries, increases in funding will not have the desired impact on programme expansion unless the right number of trained staff are employed at central, intermediate, and district levels.

Financing DOTS expansion in high burden countries

In March 2002, WHO estimated that a total of US\$ 5 billion was required for TB control in the 22 HBCs during the period 2001–2005, i.e. an average of US\$ 1 billion per year.¹¹ Of this, US\$ 2.2 billion was for inputs specific to TB control (e.g. drugs, dedicated staff, training, laboratory supplies), US\$ 2.6 billion was for the costs associated with use of general health services staff and buildings for treatment (e.g. observation of treatment), and US\$ 0.2 billion was for international technical assistance. Of the required resources, 69% were estimated to be available from the 22 HBCs themselves through regular budgets and loans, and 4% from grants from bilateral agencies. The 22 HBCs and international agencies had identified funding

gaps of around US\$ 0.5 billion over five years, or an average of US\$ 100 million per year; there were also possible gaps that had not been identified by countries of around US\$ 0.9 billion over five years, or an average of US\$ 170 million per year. This left a total funding gap of up to US\$ 1.4 billion over five years, equivalent to almost US\$ 300 million per year.

Both the update on funding availability for the five-year budgets and the financial information for the fiscal year 2003 show a substantial reduction of the overall funding gap for TB control. Although only two countries (Kenya and the Philippines) reported an increase in their funding gaps, and five countries reported no funding gap for 2003, we cannot assume that NTPs are now close to having sufficient resources to reach the global targets. There are three areas of concern:

1. There appear to be deficiencies in the proposed NTP budgets, at least for some budget line items;
2. Information on the cost of using existing staff and infrastructure for TB control is generally not available, and it is possible that the substantial funding gap in this area remains unchanged;
3. Some important deficiencies in infrastructure are beyond the scope of cost assessments made specifically for TB control.

On the first point, the budgets provided for 2003 show comparatively low allocations for activities to increase case detection, an observation made in our previous report.³ Given that increasing case detection has now been identified as the major obstacle towards reaching the global targets,¹⁷ this is a disquieting sign. NTP staff need to adopt more imaginative approaches to improving case detection, and the donor community needs to demonstrate that funds are available to support them (e.g. as recently done by CIDA). Similarly, low budgets for treatment supervision (US\$ 11 million, or 2.2% of total budgets) are worrying, at least in those coun-

tries that do not yet reach the target of 85% treatment success. These examples show that current TB budgets do not properly account for programme expansion, and do not adequately allow for innovations that are needed to reach the global targets.

With respect to the second issue, the lack of information on infrastructure costs in NTP budgets has already been noted.³ The new data collection form used for global financial monitoring of TB control included a special section on infrastructure costs, but only three countries provided data. We are therefore still left with a possible funding gap of US\$ 0.9 billion in this area, minimally reduced by US\$ 33 million contributed in 2002 (see above).

With infrastructure we include staff. Some NTP managers may assume that staffing patterns cannot easily be changed, so funds to make such changes are not included in the budget. The danger here is that new resources that become available for training and supervision will remain unused if no trainers or supervisors are available; diagnostic supplies will not be used because there are no laboratory staff or facilities (even when equipment has been supplied); drugs will be used ineffectively because no patient supervisors are available, or because there are no staff to instruct volunteers. In short, there are strong reasons to expect under-use, or the inappropriate use, of new funds if the deficiencies in infrastructure are not addressed.

Only five HBCs have attempted to quantify their staff deficits, and the budgets required are suspiciously small. The two largest NTPs, in China and India, have both received substantial donor support for some years, and now allocate as much as 39% and 28% of their total budgets for staff. They have realised that general health service staff are insufficient to effectively implement DOTS.

Infrastructure also includes buildings (hospitals, clinics, health posts, etc.). While some countries (e.g. the Russian Federation) still deliver TB services through facilities used exclusively for TB

control (whose funding accordingly comprises a substantial proportion of the total NTP budget), most other countries provide TB control services within the general health services. While the hiring of some full-time TB staff can obviously be justified, the construction of buildings uniquely for TB control is mostly unwarranted. Any existing lack of facilities would therefore not usually be attributed specifically to the costs of TB control.

The third area of concern is that some countries may not be able to reach targets for case detection and cure by filling resource gaps for TB control alone, even if the estimated costs of using existing infrastructure are comprehensive, and even if grants and loans completely compensate for any shortfall estimated by the NTP. For instance, it will generally be difficult to detect 70% of all

cases if access to the existing health infrastructure is limited to 50% of the population. The lack of funds to scale up general health care services would not be described as a funding gap for TB. The magnitude of requirements for such infrastructure investments has been estimated by the Commission on Macroeconomics and Health¹⁸ to be about the same as all disease-specific investments combined. However, it is not yet entirely clear how weaknesses in the general health services place limits on the effectiveness of TB control programmes. Nor do we know how far NTPs can compensate for these weaknesses. This is an important area for operational research.

It is not possible to assess whether the current government contributions to TB control are appropriate solely on the basis of the summary indicators

presented here. Such an assessment would have to account, for example, for the relative disease burden from tuberculosis in individual countries and cost-effectiveness ratios for alternative health care interventions. The data to carry out such an analysis have not yet been assembled.

In sum, the budgets presented here probably represent a substantial underestimate of NTP requirements, and the total cost estimates (including budgets and infrastructure costs) may significantly underestimate the resources needed to reach global targets for TB control in all HBCs. WHO intends to organize a series of workshops on planning and budgeting for NTP managers and finance officers that should result in more comprehensive budgets for the next fiscal year, and better assessments of the required infrastructure.

¹⁸ *Macroeconomics and Health: Investing in Health for Economic Development*. Report of the Commission on Macroeconomics and Health. Geneva: WHO 2001.

ANNEX 1

Data collection form (surveillance)

1. Identification

A	Country		
B	Name	National TB control programme manager or equivalent:	Person filling out this form
C	Functional Title		
D	Address		
E	Telephone		
F	Fax		
G	E-mail		

See separate "Instructions" document with detailed explanations for each page.
Please send completed form to your WHO country/regional office.

2. National policy in 2001

Responses for questions A - F: No; Yes; (Select one)

A	Do you have a national TB control manual (or guidelines for TB diagnosis and treatment) in your country? If Yes, give full title and publication date here, and provide a copy to WHO country office, if you have not already done so.	No	Yes
B	Are there TB-specific line items in the national health budget?	No	Yes
C	Were TB drug forecasting, financing, and procurement centralized in your country in 2001?	No	Yes
D	Was the sale of rifampicin restricted by national or state/provincial laws in 2001?	No	Yes
E	Do you have a national TB reference lab?	No	Yes
F	Do you have a mechanism for collecting TB case notifications from individual private practitioners?	No	Yes
G	If F="Yes", please specify.		
H	What government sectors (e.g., prisons, military) were not required to report to your programme in 2001, and are therefore not represented in your TB data?		

See separate "Instructions" document with detailed explanations for each page.
Please send completed form to your WHO country/regional office.

3. National coverage of TB control strategies in 2001

Responses for questions F - I: absolute numbers for F and G; percentages for H and I.

A	How many basic administrative health jurisdictions/operational health units were there in your country in 2001?	
B	How many of these administrative/operational units were considered as "DOTS" units in 2001?	
C	What proportion of the country's population lived within the administrative/operational boundaries (catchment areas) of health facilities that fell under the DOTS scheme in your country in 2001?	%
D	What proportion of the country's population was considered to have "access" to TB diagnosis in DOTS units in 2001? ("Access" means living within a half day's travel time.)	%

See separate "Instructions" document with detailed explanations for each page.
Please send completed form to your WHO country/regional office.

4. Strategic components of TB control in 2001

Please answer these questions **from the perspective of the basic admin/operational units.**

Responses for each question: **NO. In SOME units. In ALL units.** (Select one)

		DOTS units			Other units		
* A	Is sputum microscopy routinely used to diagnosis suspected pulmonary cases.	No	Some	All	No	Some	All
B	Is there a system for monitoring the number of TB suspects assessed by smear microscopy?	No	Some	All	No	Some	All
C	Is smear microscopy provided free of charge in public clinics?	No	Some	All	No	Some	All
* D	Is standardized, short-course chemotherapy (less than 9 months) used routinely to treat sputum smear-positive cases?	No	Some	All	No	Some	All
* E	Is direct observation of treatment used routinely -- at least during the initial phase (2-3 months) of treatment?	No	Some	All	No	Some	All
F	Are TB drugs provided free of charge to all TB patients in public clinics?	No	Some	All	No	Some	All
* G	Are treatment outcomes of ALL smear-positive patients monitored, analyzed by cohort, and reported to the next supervisory level 3-4 times per year?	No	Some	All	No	Some	All
H	For cases of pulmonary TB, are child family members (age < 6 years) routinely examined and treated (at least with INH)?	No	Some	All	No	Some	All

* Essential components of DOTS.

See separate "Instructions" document with detailed explanations for each page.
Please send completed form to your WHO country/regional office.

5. Data Quality

		DOTS	Other
A	What was the level of detail of your notification data at national level in 2001? (see Instructions)	Data aggregated (re-compiled) by mid-level (state/provincial report)	<input type="checkbox"/>
		Data aggregated by lowest admin level (district report).	<input type="checkbox"/>
		Individualized data	<input type="checkbox"/>
B	If you chose the first response to question A (above), can you tell, at national level, how many district reports for 2001 were missing?	No Yes	No Yes
C	If you chose the first or second response to question A (above), please provide the number of EXPECTED and MISSING reports (at lowest level possible; see Instructions)	Number expected	
		Number missing	
D	When were your routinely collected TB data considered "final," or when will they be considered final? (See Instructions)	(month, approx. day)	(month, approx. day)

See separate "Instructions" document with detailed explanations for each page.
Please send completed form to your WHO country/regional office.

6. Notifications for 2001 (absolute numbers)

	DOTS	Other
A New pulmonary smear-positive		
B New pulmonary smear-negative		
C New pulmonary: no smear or results unknown		
D New extra-pulmonary		
E Relapse smear-positive		
F TOTAL NOTIFICATIONS		
Re-treatment not included in WHO notifications:		
G Pulmonary smear-positive re-treatment after failure		
H Other retreatment		

See separate "Instructions" document with detailed explanations for each page.
Please send completed form to your WHO country/regional office.

7. Notifications for 2001, continued (absolute numbers): age and sex of new smear-positive cases

		0-14	15-24	25-34	35-44	45-54	55-64	65+
DOTS								
A	Male							
B	Female							
Other								
C	Male							
D	Female							

If data are based on less than a year's worth of data, please note this in 'Remarks.'

See separate "Instructions" document with detailed explanations for each page.
Please send completed form to your WHO country/regional office.

8. Treatment outcomes for cases registered in 2000 (absolute numbers)

new pulmonary smear-positive				Re-treatment cases (all) Specify case types included		
		example	DOTS	Other	DOTS	Other
Y						
Z	Cohort registered for treatment (see Instructions)	107				
A	Cured	63				
B	Completed	22				
C	Died	4				
D	Failed	6				
E	Defaulted	7				
F	Transferred out	2				
total evaluated:		104				

See separate "Instructions" document with detailed explanations for each page.
Please send completed form to your WHO country/regional office.

9. Remarks

See separate "Instructions" document with detailed explanations for each page.
Please send completed form to your WHO country/regional office.

10. Remarks, continued

Please read and tick each item below to verify (double-check) that you have provided appropriate remarks on the previous page.

- ☐ Information about how "access" is defined and measured in my country (3.D).
- ☐ Information about contact tracing and approach toward child contacts (4.H)
- ☐ More detailed notification data, e.g., data stratified by short-course versus other treatment regimen.
- ☐ Explanation for why age/sex data do not add up to the number of smear-positive cases notified.
- ☐ Explanation for a large difference between the number of cases "registered" (under treatment outcomes) and the number of new smear-positive cases initially reported to WHO last year.
- ☐ Explanation for a large percentage of cases not evaluated.
- ☐ More detailed information about outcomes, e.g., outcomes stratified by short-course versus other regimen, outcomes for directly observed regimens versus other regimens, deaths from TB versus deaths with TB.
- ☐ Updates of previous years' notification data.
- ☐ Notes on progress (or problems) during 2002 -- e.g., expansion of DOTS coverage since 2001 (3.C).

See separate "Instructions" document with detailed explanations for each page.
Please send completed form to your WHO country/regional office.

ANNEX 2

Data collection form (financing)

1. Identification

Country	<input type="text"/>
Name	<input type="text"/>
Functional Title	<input type="text"/>
Address	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
Telephone	<input type="text"/>
Fax	<input type="text"/>
E-mail	<input type="text"/>

2. Basic information

Duration of fiscal year 2003	<input type="text"/>	<i>mm/yyyy - mm/yyyy</i>
Currency in which financial information is provided	<input type="text"/>	<i>e.g., name of local currency or US Dollars</i>
Exchange rate used for currency conversions (if applicable)	<input type="text"/>	<i>e.g., 1 USD = 500 local currency units</i>
Expected total number of patients treated in DOTS areas	<input type="text"/>	<i>indicate the number of patients with all forms of TB PLANNED for, NOT a previously reported number</i>
Expected total number of cases in the whole country	<input type="text"/>	<i>indicate the number of patients with all forms of TB PLANNED for for the whole country, including DOTS and non-DOTS areas</i>
Expected number of sm+ patients treated in DOTS areas	<input type="text"/>	<i>indicate the number of patients with all forms of TB PLANNED for, NOT a previously reported number</i>
Expected number of sm+ cases in the whole country	<input type="text"/>	<i>indicate the number of patients with sm+ TB PLANNED for for the whole country, including DOTS and non-DOTS areas</i>

3. BUDGET

	Total required budget	Budget for DOTS areas	Funding amounts / source		STATUS		Comments
Drugs			A	B	A	B	
			C	D	C	D	
			E	F	E	F	
Diagnostic supplies			A	B	A	B	
			C	D	C	D	
			E	F	E	F	
NTP activities			A	B	A	B	
			C	D	C	D	
			E	F	E	F	
DOT			A	B	A	B	
			C	D	C	D	
			E	F	E	F	
Advocacy / partnerships / social mobilization			A	B	A	B	
			C	D	C	D	
			E	F	E	F	
Dedicated facilities			A	B	A	B	
			C	D	C	D	
			E	F	E	F	
Dedicated staff in GHS			A	B	A	B	
			C	D	C	D	
			E	F	E	F	
NEW dedicated buildings / equipment / vehicles			A	B	A	B	
			C	D	C	D	
			E	F	E	F	
Other			A	B	A	B	
			C	D	C	D	
			E	F	E	F	

A = Government (central)
 C = Social insurance
 E = Loans

B = Government (peripheral)
 D = Grants
 F = Other

4A. General health service structure

	Name of administrative level (e.g., province, district etc.)	Total number of units	Number of units with full DOTS coverage
A			
B			
C			
D			
E			

4.B Facilities used for TB control

Level	Type of facility	Average no.	TB-related workload		Total annual budget
			DOTS areas	non-DOTS areas	
A	A				
	B				
	C				
	D				
	E				
B	F				
	G				
	H				
	I				
	J				
C	K				
	L				
	M				
	N				
	O				
D	P				
	Q				
	R				
	S				
	T				
E	U				
	V				
	W				
	X				
	Y				

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4.C Dedicated staff and equipment in general health services

FACILITY	Type of STAFF	Average number		Average cost	Type of EQUIPMENT	Average number		Average cost
		DOTS areas	non-DOTS areas			DOTS areas	non-DOTS areas	

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5. Procedures for diagnosis and treatment

	DOTS areas	non-DOTS areas	
Microscopy slides	<input type="text"/>	<input type="text"/>	<i>Number per case</i>
Chest x-ray	<input type="text"/>	<input type="text"/>	<i>Number per case</i>
Proportion of patients hospitalized	<input type="text"/>	<input type="text"/>	
Average duration of stay	<input type="text"/>	<input type="text"/>	
Number of clinic visits per case	<input type="text"/>	<input type="text"/>	
DOT activities per case (describe)	<input type="text"/>	<input type="text"/>	

ANNEX 3

Profiles of high-burden countries

Afghanistan

Overview of TB control system

Following the events of 11 September 2001, there was a complete collapse of the already precarious health infrastructure in Afghanistan. At the end of 2001, a new provisional government was installed, and rehabilitation of TB control began in the context of overall reconstruction of health services. In 2002, an international staff member was appointed by WHO to assist with TB control, and an NICC was created which, together with the major stakeholders, drafted a strategic plan and budget.

Case detection and treatment

In 2001, TB services in Afghanistan were being provided by a patchwork of government health facilities and NGOs, largely without the benefit of regional (mid-level) coordination. Seventy administrative areas were attempting to implement DOTS by the end of 2001, covering about 20% of the population. There was an increase in the notification rate from 33 per 100 000 in 2000 to 44 per 100 000 in 2001. As in previous years, an unusual predominance of female patients persisted in 2001 (3/4 of smear-positive patients are women). Possible explanations include a higher incidence of TB in women, and the fact that men tend to seek treatment in the (more expensive) private sector, which does not report cases. Treatment success for the 2000 cohort was 86%. The challenge facing the NTP is to maintain the high quality treatment while increasing the number of cases treated.

Implementation of national plan for TB control

The assignment of an international TB expert to Kabul early in 2002 facilitated coordination between national and international partners including NGOs.

This led to the development of a strategic plan in August 2002, and to the formation of an NICC. The plan aims to achieve 30% DOTS coverage by the end of 2002, and to reach global targets by 2005. Activities in 2002 focused on leadership development, logistical management, human resources development, and partnership. There are tremendous challenges in undertaking this rehabilitation, given the extremely weak health infrastructure, low staff motivation due to poor salaries, and weak technical and leadership skills. A workshop on Afghan returnees and internally displaced persons inside Afghanistan is planned for Kabul in early 2003, with the participation of NTP staff from Pakistan, Afghanistan, Iran, Tajikistan, Uzbekistan, and Turkmenistan.

Partnerships

WHO provides overall technical and financial support with the bulk of financial support coming from CIDA. JICA is funding the development of a TB laboratory network. GLRA, MEDAIR, GMS, and other NGOs provide TB diagnostic and treatment services in their catchment areas. The Government of Norway provided a large quantity of TB drugs, laboratory supplies, and operational funds, and the Government of Italy will continue to provide programme funds. An application has been submitted to the GFATM, as continued operation depends on external aid.

Financing

Total budget requirements for the NTP will be US\$ 2.8 million in 2003, all of

PROGRESS IN TB CONTROL IN AFGHANISTAN

Indicators

• Treatment success 2000 cohort	86%
• DOTS detection rate 2001	15%
• Proportion NTP budget available	100%
• Government contribution to available NTP funding, including loans	0%
• Government contribution to total TB control costs, including loans	not estimated
• Proportion government health expenditures used for TB*	not estimated

Constraints to achieving targets

- Weak health sector infrastructure, including insufficient personnel
- Weak NTP capacity due to staff shortages and poor training
- Low community involvement in TB control coupled with high stigma about TB
- Increasing private sector involvement without guidance on appropriate TB control

Remedial actions needed

- Construction and rehabilitation of physical infrastructure
- Recruitment and retention of well-trained clinical and management staff
- Development of strategies to reach remote parts of country, including community-based care
- Education campaign to reduce stigma associated with TB
- Improve private practitioners' knowledge of DOTS

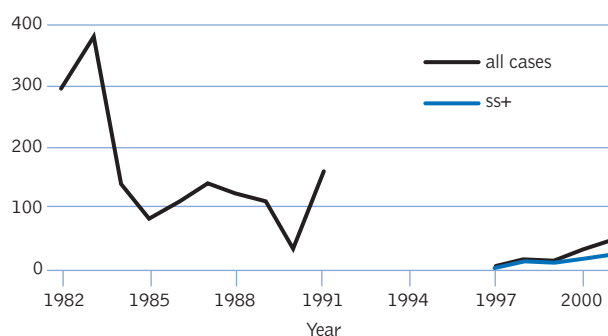
* See footnote 16, page 14.

AFGHANISTAN

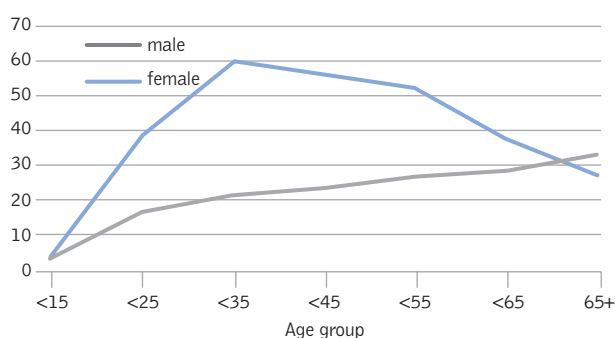
Population	22 474 197	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	21	DOTS population coverage (%)	11	14	15	20
Est. incidence (all cases/100 000 pop) ¹	314	Notification rate (all cases/100 000 pop)	15	16	33	44
Est. incidence (new ss+/100 000 pop) ¹	141	Notification rate (new ss+ cases/100 000 pop)	8.8	7.9	13	21
Est. % of adult (15–49y) TB cases HIV+ ¹	0	Case detection rate (new ss+, %)	6	5.4	9.3	15
Est. % of new cases multidrug resistant ²	7.3	DOTS detection rate (new ss+, %)	6	5	9	15
DOTS subnat'l reps (rec'd/expected)	Unknown	DOTS treatment success rate (new ss+, %)	33	87	86	—

Notification rate (per 100 000 pop)

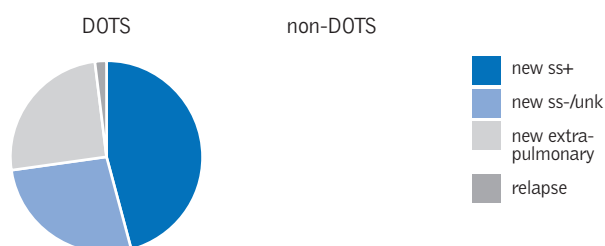
Notification (all cases) = 9 930 in 2001



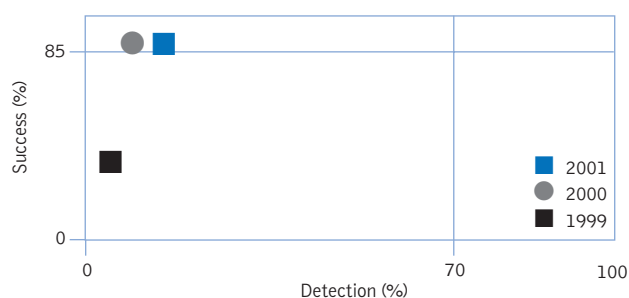
Notification rate by age and sex (new ss+)³



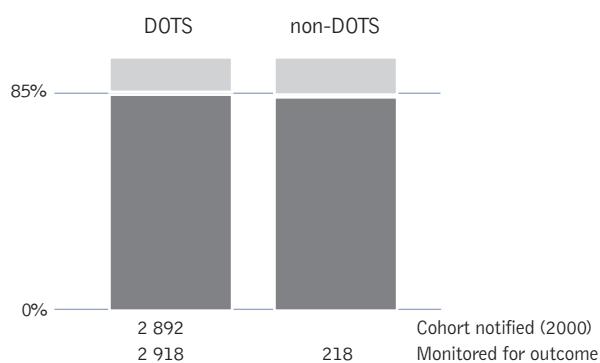
Case types notified



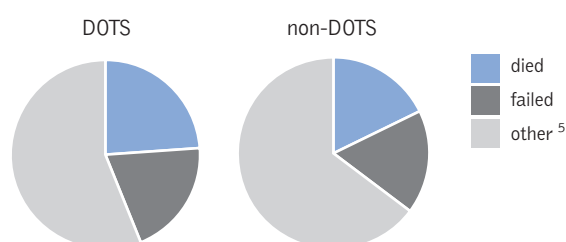
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

AFGHANISTAN

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTP budget							
Drugs	1.1	—	—	—	1.1	—	—
Diagnostic supplies	0.1	—	—	—	0.1	—	—
Basic NTP activities	0.5	—	—	—	0.5	—	—
Treatment observation	0.5	—	—	—	0.5	—	—
Activities to increase case detection	0.2	—	—	—	0.2	—	—
Equipment / vehicles	0.3	—	—	—	0.3	—	—
Dedicated facilities	—	—	—	—	—	—	—
Dedicated staff	0.1	—	—	—	0.1	—	—
Total NTP budget	2.8	—	—	—	2.8	—	—
Infrastructure costs							
Shared staff / Shared facilities	ne	ne	ne	ne	ne	ne	ne
TOTAL COSTS OF TB CONTROL*	ne	ne	ne	ne	ne	ne	ne

— Indicates zero; ne indicates not provided and/or not estimated

* Includes NTP budget and infrastructure costs

which will be financed through donor contributions. Due to the prevailing situation in the country, it is impossible to assess the overall government contribution to TB control in the form of financing for shared general health services staff and facilities.

Bangladesh

Overview of TB control system

The 1998–2003 Health and Population Sector Programme (HPSP) has integrated the National TB Programme into the reformed Essential Services Package operating across the health sector. Health policy is directed at improving equity and access to all essential health services, including TB care. The DOTS strategy was introduced in 1993 and nominally covers 95% of the country.

Case detection and treatment

DOTS coverage has been at least 90% since 1998, but case detection remains low (26%). This lack of progress is attributed mainly to a large private health sector; there is no mechanism for the collection of case notifications from private practitioners. The sparse provision of diagnostic centres within the NTP, and the absence of an effective system for referring diagnosed patients to treatment facilities, may also play a role. A TB prevalence survey is planned for 2003, which will give a more accurate estimate of the TB burden in Bangladesh, and provide an improved assessment of the case detection rate.

The reporting system in Bangladesh is functioning well; almost all units routinely send quarterly reports to the central level (of 2 400 reports expected in 2001 all but 63 were received). Treatment success under DOTS has improved slightly each year since 1998, to 83% for the 2000 cohort. The 85% target could be reached by bringing down the default rate (8%). Some patients diagnosed in DOTS clinics refuse treatment supervision. The treatment outcomes for these patients (who were not included in the 2000 DOTS cohort) were poor: only 65% were successfully treated, and 24% defaulted.

Implementation of national plan for TB control

Although Bangladesh has a 5-year strategic plan (2001–2005) for DOTS expansion, initially with adequate funding, the slow progress of health sector reform has affected TB control. As a result, staff motivation and commitment have been low. An NICC was formed in July 2002. Difficulties with the integration of all health programmes into the HPSP have meant that no training, monitoring, or supervision have been carried out for the past 18 months. However, recent high-level meetings have elevated the importance of TB control, which may lead to progress. Case detection in many parts of the country needs to be improved by raising community awareness, and by strengthening DOTS services. Knowledge about DOTS services will hopefully be improved in 2003 through a COMBI plan, supported by CIDA funds.

Given that private practitioners provide a major portion of health services, implementation of DOTS within the private health care system is paramount. Health sector reform aims to facilitate TB partnerships with the private sector, thereby ensuring standardization of TB treatment. However, there continues to be inadequate collaboration with general hospitals, medical colleges, and private practitioners resulting in inconsistent drug regimens and uneven delivery of DOTS. The problem of inconsistent drug regimens was partially addressed in 2002 through the adoption of a revised drug protocol, including the introduction of 4-FDCs. Steps are being taken to increase the participation of general practitioners and academic institutions in DOTS.

Partnerships

Partnerships are a key component of Bangladesh's success in combining

PROGRESS IN TB CONTROL IN BANGLADESH

Indicators

• Treatment success 2000 cohort	83%
• DOTS detection rate 2001	26%
• Proportion NTP budget available	72%
• Government contribution to available NTP funding, including loans	53%
• Government contribution to total TB control costs, including loans	82%
• Proportion of government health expenditures used for TB*	3.0%

Constraints to achieving targets

- Funding gap of US\$ 2.9 million in 2003
- Inadequate training, supervision, and monitoring resulting from problems implementing health sector reform
- Too few skilled managers
- Private sector not compliant with DOTS

Remedial actions needed

- If the GFATM application is unsuccessful, funds will have to be sought elsewhere
- Hiring and training of managerial staff
- Better training and supervision of staff to improve monitoring
- Better collaboration with private sector

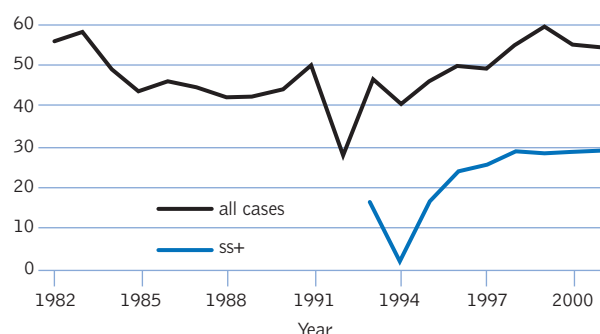
* See footnote 16, page 14.

BANGLADESH

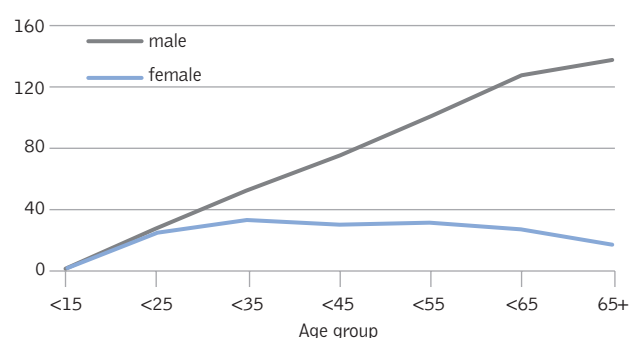
Population	140 369 174	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	4	DOTS population coverage (%)	90	90	92	95
Est. incidence (all cases/100 000 pop) ¹	233	Notification rate (all cases/100 000 pop)	55	59	55	54
Est. incidence (new ss+/100 000 pop) ¹	105	Notification rate (new ss+ cases/100 000 pop)	29	28	28	29
Est. % of adult (15–49y) TB cases HIV+ ¹	0.1	Case detection rate (new ss+, %)	26	26	26	28
Est. % of new cases multidrug resistant ²	1.4	DOTS detection rate (new ss+, %)	23	23	25	26
DOTS subnat'l reps (rec'd/expected)	2171 / 2230	DOTS treatment success rate (new ss+, %)	80	81	83	—

Notification rate (per 100 000 pop)

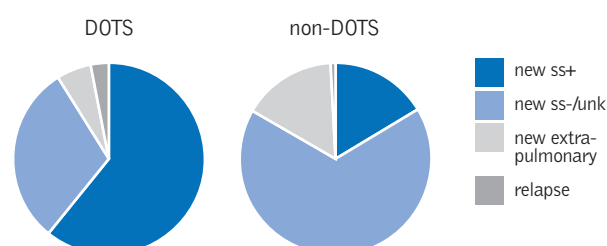
Notification (all cases) = 76 302 in 2001



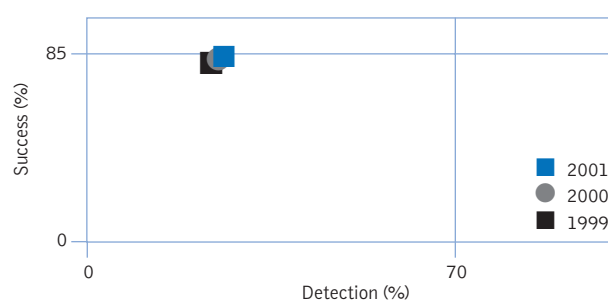
Notification rate by age and sex (new ss+)³



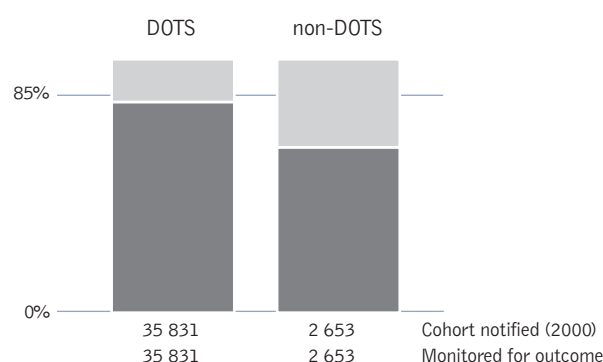
Case types notified



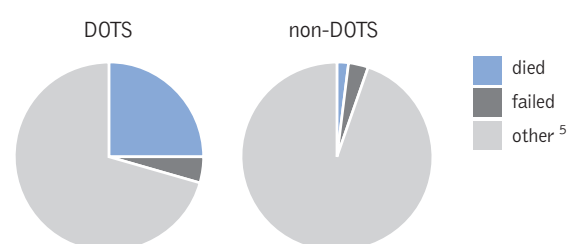
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

BANGLADESH

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTP budget							
Drugs	1.5	0.8	—	—	0.7	—	—
Diagnostic supplies	0.3	0.1	—	—	—	—	0.2
Basic NTP activities	1.6	0.5	—	—	—	—	1.1
Treatment observation	—	—	—	—	—	—	—
Activities to increase case detection	1.3	0.02	—	—	0.9	—	0.4
Equipment / vehicles	0.7	0.1	—	—	—	—	0.6
Dedicated facilities	—	—	—	—	—	—	—
Dedicated staff	0.9	0.3	—	—	—	—	0.6
Total NTP budget	6.3	1.8	—	—	1.6	—	2.9
Infrastructure costs							
Shared staff / Shared facilities	19.0^a	19.0^a	—	—	—	—	—
TOTAL TB CONTROL COSTS*	25.3^a	20.8^a	—	—	1.6	—	2.9

— Indicates zero

* Includes NTP budget and infrastructure costs

a WHO estimates, data not provided by the NTP

international collaboration with both effective NGO involvement and with national political commitment. NGOs have contributed to the treatment success and overall coverage achieved by the NTP, providing DOTS services to 55% of the population under MoUs. BRAC and DFB presently provide TB services to 40% of the population. Costs to support TB have also been shared by WHO, USAID, and the ADB. The GDF provided drugs in 2002. Additional microscopes to strengthen diagnostic capacity were purchased with CIDA funds.

Financing

The total NTP budget for 2003 is US\$ 6.3 million. The NTP has secured additional funding for drugs (through GDF) and IEC (through CIDA), and there is no shortage of money for drugs as a result. However, the total funding gap remains large, at US\$ 2.9 million or 46% of the total requirement. Bangladesh submitted an application to GFATM in late 2002. Approval of the proposal would fill the funding gap and enable the NTP to proceed with all activities as planned.

It is important to note that the

budget of the NTP includes a relatively large budget for (i) activities related to increasing case detection (21% of total budget) and (ii) dedicated staff within the general health services (14% of total budget). The NTP therefore appears committed to eliminating the key obstacle to reaching the global targets (low case detection), and to overcoming a significant programme weakness (low managerial capacity for TB within the general health services).

Brazil

Overview of TB control system

Brazil demonstrated renewed commitment to TB control in 1998 by adopting the DOTS strategy, though DOTS coverage remained low in 2002. Health sector reform has provided opportunities to decentralize TB services, and to bestow authority upon mayors in an attempt to ensure accessibility to the general population. However, the commitment, infrastructure, and resources to implement DOTS are lacking in some geographic areas. Decentralization of public health services has also presented a challenge to the standardization and implementation of diagnosis, treatment, and evaluation. It is only in DOTS areas that TB control is well integrated within the primary health care system.

Case detection and treatment

Notwithstanding some reporting difficulties, treatment success under DOTS has apparently been close to or above the 85% target since 1998. The large fraction of cases detected from all sources (78%) suggests that DOTS could expand rapidly – the majority of cases are already being found and reported by the public health system. Coverage did increase markedly from 7% to 32% during 2001, but this has not yet been matched by an increase in case detection under DOTS. Despite the low coverage of DOTS, and the growing prevalence of HIV infection, the continuing downward trend in case notifications may reflect a real, if slow, decline in incidence.

Implementation of national plan for TB control

A strategic plan for 2001 to 2005 maps out how Brazil will attempt to reach the global targets for TB control by 2005. The plan promotes political and social

mobilization, and expansion of DOTS to 329 priority municipalities (of 5500 municipalities in the country) from which 80% of TB cases are reported. Several steps have been taken towards strengthening commitment to TB: an NICC was created in 2001 to assist with planning and coordination of TB control, and an international advisor for TB control was appointed in 2002. A national executive secretary was hired to intensify TB control actions by coordinating activities, and technical assistance was made available in all states. A meeting of the Brazilian Congress of Pneumology and Tuberculosis set TB as a high priority. TB has also been established as a priority in the government's national health agenda. The NTP was strengthened by additional staff, including two international consultants. Standardized guidelines for TB case management, monitoring, recording, and reporting were updated according to international standards, and began

to be implemented in 2002. These include training in smear microscopy, laboratory management, and epidemiological surveillance. Appropriate drug management was reinforced at the state and municipal levels. Public knowledge of TB is limited, and this was addressed in part through national and regional health promotion activities, such as a National TB Week and the participation of medical students in TB awareness and control efforts. The increasing problem of TB interacting with HIV/AIDS was addressed through the formation of a joint working group.

Partnerships

External technical collaboration for the country is led by WHO/PAHO and IUATLD. Other partners are GLRA and DFB for training and monitoring. CDC is a potential source of technical support in the future. Brazilian NGOs have helped to build national technical partnerships.

PROGRESS IN TB CONTROL IN BRAZIL

Indicators

● Treatment success 2000 cohort	84%
● DOTS detection rate 2001	8%
● Proportion NTP budget available	70%
● Government contribution to available NTP funding	100%
● Government contribution to total TB control costs	91%
● Government health expenditures allocated for TB*	0.3%

Constraints to achieving targets

- Funding gap of US\$ 5 million in 2003
- Weak political commitment at state level as a result of rapid decentralization, leading to variable quality in DOTS service
- Inconsistent monitoring of treatment outcomes

Remedial actions needed

- Mobilization of resources from government or donors
- High-level mission to encourage better collaboration between state and municipal health services
- Increase in staff, training, and supervision to improve monitoring of treatment

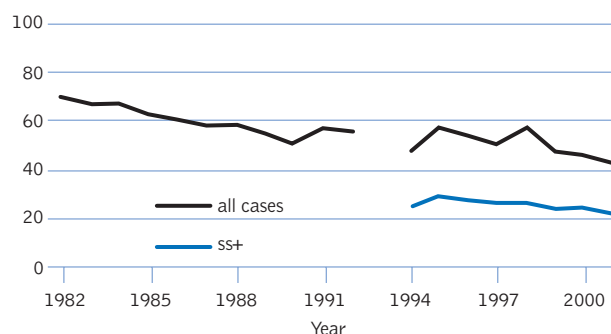
* See footnote 16, page 14.

BRAZIL

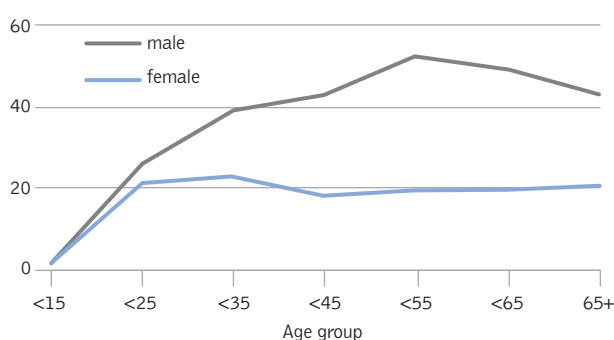
Population	172 559 324	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	15	DOTS population coverage (%)	3	7	7	32
Est. incidence (all cases/100 000 pop) ¹	64	Notification rate (all cases/100 000 pop)	57	47	46	43
Est. incidence (new ss+/100 000 pop) ¹	28	Notification rate (new ss+ cases/100 000 pop)	26	25	24	22
Est. % of adult (15–49y) TB cases HIV+ ¹	3.3	Case detection rate (new ss+, %)	82	80	82	78
Est. % of new cases multidrug resistant ²	0.9	DOTS detection rate (new ss+, %)	4	4	8	8
DOTS subnat'l reps (rec'd/expected)	26 / 27	DOTS treatment success rate (new ss+, %)	91	89	73	—

Notification rate (per 100 000 pop)

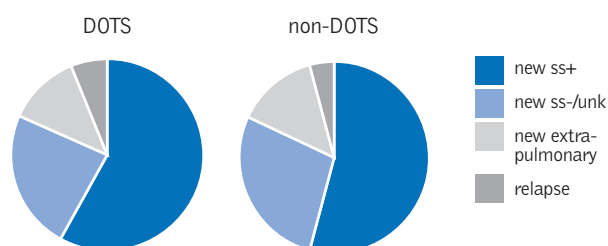
Notification (all cases) = 74 466 in 2001



Notification rate by age and sex (new ss+)³



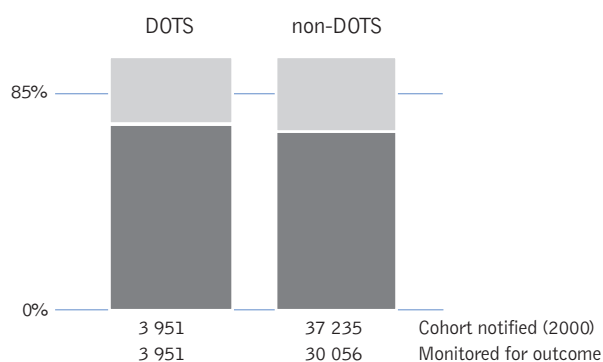
Case types notified



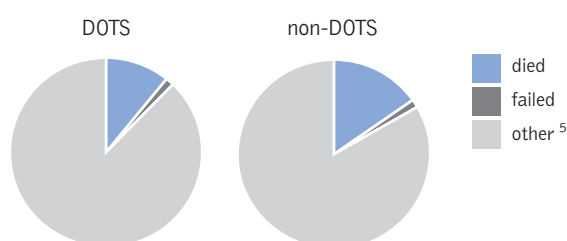
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

BRAZIL

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTP budget							
Drugs	5.8	—	—	—	—	—	
Diagnostic supplies	2.1	—	—	—	—	—	
Basic NTP activities	3.0	—	—	—	—	—	
Treatment observation	5.0	—	—	—	—	—	
Activities to increase case detection	0.3	—	—	—	—	—	
Equipment / vehicles	—	—	—	—	—	—	
Dedicated facilities	—	—	—	—	—	—	
Dedicated staff	0.4	—	—	—	—	—	
Total NTP budget	16.6	11.6^a	—	—	—	—	5.0^a
Infrastructure costs							
Shared staff / Shared facilities	37.0^b		37.0^b		—	—	—
TOTAL TB CONTROL COSTS*	53.6		48.6		—	—	5.0

* includes NTP budget and infrastructure costs

a No breakdown for specific budget line items was available

b WHO estimates, data not provided by the NTP

Financing

The total budget requirement for the NTP in 2003 is US\$ 16.6 million. US\$ 11.6 million is budgeted for TB within the central government's health budget. Since no additional donations are anticipated for 2003, there is a possible funding gap of US\$ 5.0 million, or 31% of the required budget. This fund-

ing gap includes US\$ 400 000 for staff specifically working on TB in the general health services. The NTP needs to consider whether the relatively large funding gap can be reduced in the next fiscal year through government contributions, or whether donor assistance should be sought.

Currently all staff, except for the central management unit, also do work that

is unrelated to TB in this integrated health care system. However, cost information for the joint use of infrastructure was not provided. If previous estimates for this cost component are used, the total government spending on TB control is around US\$ 49 million, equivalent to 0.3% of total government health expenditures.

Cambodia

Overview of TB control system

For the last 20 years, Cambodia has been rebuilding a health system dismantled by war. The overall strategy is to improve equity and accessibility to essential health services, including TB care. Since the public health infrastructure was very weak when DOTS was adopted in 1994, TB treatment was provided only in hospitals. The positive impact of the health reforms is demonstrated by the fact that, by 2002, core primary health care services were available in 74 districts through 68 referral hospitals and approximately 650 health centres. National technical guidance was provided through standardized guidelines on TB case management and laboratory procedures. Twenty full- or part-time health professionals are employed at NTP headquarters, operating from the National Centre for TB and Leprosy Control (CENAT) in Phnom Penh. The continued strengthening of the health network will allow TB services to be decentralized to peripheral health centres, improving access for all.

Case detection and treatment

DOTS is available in all 68 referral hospitals, giving a nominal coverage of 100%. However, only 342 out of a planned 946 health centres were providing DOTS in 2001, suggesting that a large proportion of the population did not have access. Plans to extend DOTS to more health centres will, if implemented, improve the case detection rate (41% for 2001). The results of the 2002 national disease prevalence survey will be published during 2003; these new data may give a different impression of the burden of TB in Cambodia, and hence a different estimate of the case detection rate.

Nearly 100% of notified cases were registered for treatment in 2000, and

outcomes were recorded for all registered patients. The data submitted indicate that 91% of registered cases were successfully treated, so that the 85% target for treatment success was exceeded for the sixth year in a row.

Implementation of national plan for TB control

A new 5-year (2001–2005) policy and strategy for TB control was released in 2001, along with a new national health framework. In 2002, the NICC held regular meetings to assist the NTP in obtaining funds, and to coordinate technical advice and resource mobilization. Strong political commitment for TB control has been translated into an increase in the national budget for TB drugs. By the end of 2002, a total of 381 health centres were offering DOTS.

Expansion will continue in 2003. Activity budgets were also partially decentralized to ensure better distribution and management of funds, though this needs to continue in 2003. By the end of 2005, DOTS should be available in all 946 health centres (one facility per 10 000 population) which are being developed or built throughout the country, adding to 75 national, referral, and NGO hospitals. In rural areas, community-based DOTS will be introduced where appropriate, and there are continuing IEC efforts with NGOs, including the development of materials and the training of central staff. Non-adherence to DOTS in the private sector and in some large hospitals remains a serious concern, and there are plans in 2003 to address this through development of a PPM pilot project.

PROGRESS TOWARDS 2005 TARGETS IN CAMBODIA

Indicators

• Treatment success 2000 cohort	91%
• DOTS detection rate 2001	41%
• Proportion NTP budget available	84%
• Government contribution to available NTP funding, including loans	34%
• Government contribution to total TB control costs, including loans	65%
• Proportion government health expenditures used for TB*	9.0%

Major constraints to achieving targets

- Limited knowledge and low motivation among health professionals resulting in high turnover
- Poor awareness of TB in the general population
- Low access to health services including DOTS
- TB-HIV epidemic threatens success of DOTS

Remedial actions needed to overcome constraints

- Refresher courses to be offered to all TB staff to improve knowledge about TB treatment and control
- Salary increases to improve staff motivation
- IEC to increase awareness about TB in the general population
- Community-based DOTS to improve access to services in rural areas
- Screening for TB among people infected with HIV to begin in 4 cities

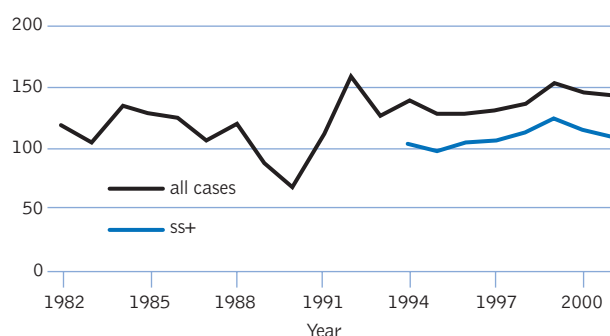
* See footnote 16, page 14.

CAMBODIA

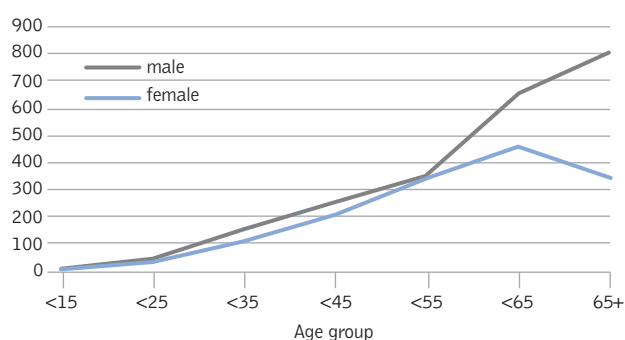
Population	13 440 523	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	18	DOTS population coverage (%)	100	100	99	100
Est. incidence (all cases/100 000 pop) ¹	585	Notification rate (all cases/100 000 pop)	136	151	144	143
Est. incidence (new ss+/100 000 pop) ¹	261	Notification rate (new ss+ cases/100 000 pop)	112	123	113	107
Est. % of adult (15–49y) TB cases HIV+ ¹	20	Case detection rate (new ss+, %)	45	49	44	41
Est. % of new cases multidrug resistant ²	4.2	DOTS detection rate (new ss+, %)	45	49	44	41
DOTS subnat'l reps (rec'd/expected)	96 / 96	DOTS treatment success rate (new ss+, %)	95	93	91	—

Notification rate (per 100 000 pop)

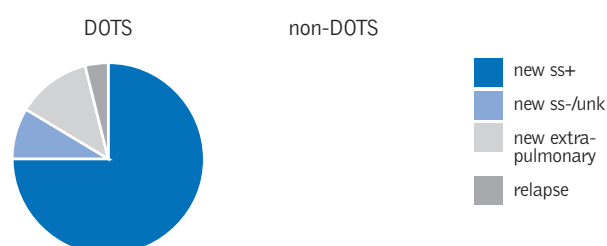
Notification (all cases) = 19 170 in 2001



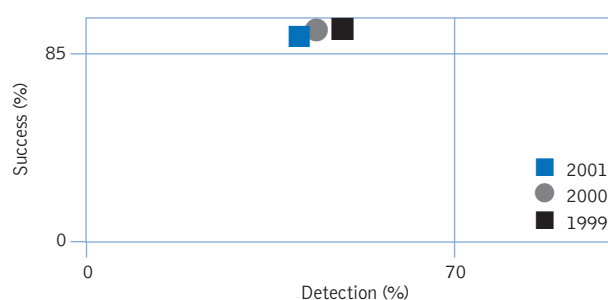
Notification rate by age and sex (new ss+)³



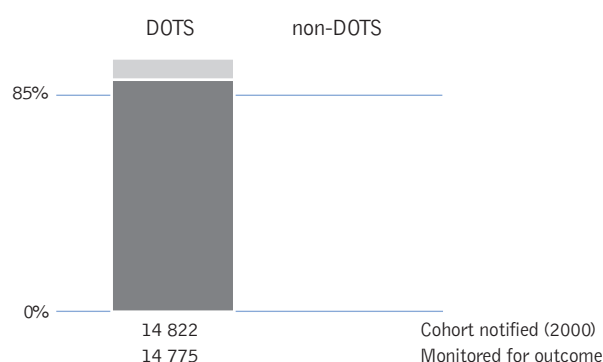
Case types notified



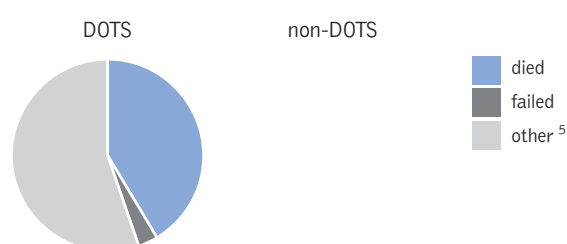
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

CAMBODIA

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTP budget							
Drugs	1.2	—	—	—	1.2	—	—
Diagnostic supplies	0.2	—	—	—	0.1	0.1	—
Basic NTP activities	1.0	—	—	—	0.4	0.6	—
Treatment observation	—	—	—	—	—	—	—
Activities to increase case detection	0.3	—	—	—	0.2	0.1	—
Equipment / vehicles	0.7	—	—	—	0.5	0.1	0.1
Dedicated facilities	0.7	0.2	—	—	0.3	—	0.2
Dedicated staff	0.8	0.3	—	—	—	—	0.5
Total NTP budget	4.9	0.5	—	—	2.7	0.9	0.8
Infrastructure costs							
Shared staff / Shared facilities	5.0^a	5.0^a	—	—	—	—	—
TOTAL TB CONTROL COSTS*	9.9^a	5.5^a	—	—	2.7	0.9	0.8

— Indicates zero

* Includes NTP budget and infrastructure costs

^a WHO estimates, data not provided by the NTP

The NTP is presently revising its TB recording and reporting system to ensure full compatibility with the needs of the changing health system. These changes mean that training and supervision are essential to ensure high-quality services, including the consistent and accurate use of smear microscopy for diagnosis. The inclusion of adequate training on TB control is being carefully considered within the training package on essential health services. Building on the experience of the 2002 national prevalence survey, an additional survey of HIV among TB patients is planned for early 2003. A pilot project on TB/HIV management will also begin in 4 provinces with high rates of HIV infection.

Partnerships

A multisectoral partnership, the National Committee Against Tuberculosis, has been established and is chaired by the Prime Minister. External technical collaboration is led by WHO and JICA. Support from MSF and RIT has helped to maintain technical quality, and the World Food Programme contributes food to a nutritional support scheme for TB patients. The principal financial partners are the World Bank and JICA, with additional support from USAID, the Government of Japan, and CIDA. Cambodia has submitted an application to the GFATM.

Financing

The NTP will continue to receive support from a consortium of donors and

a World Bank loan in 2003. The remaining funding gap is projected to be relatively small (16% of required budget). The gap will mainly affect staff salaries and maintenance costs in dedicated facilities. The government contribution to the NTP budget is relatively small (12% of existing resources), making the NTP heavily dependent on continuing outside support.

The cost of shared staff and facilities needed for TB control has been estimated as US\$ 5.0 million in 2003. Country data on the availability and use of facilities are not available. Under the assumption that sufficient capacity is available (i.e. the estimated costs are fully funded), the government contribution to TB control is 55% of the total cost.

China

Overview of TB control system

The three priorities for TB control in China are: to maintain DOTS services where they have been introduced during the 1990s; to expand DOTS to the remaining 30% to 40% of the country; and to increase case detection within DOTS areas by strengthening the referral of patients to TB dispensaries.

A 3-tier primary health care system is in place in the rural areas with health units in counties, townships, and villages. Villages have simple clinics staffed by doctors, townships have a clinic or a small hospital, and counties have several hospitals. In urban areas, the health system is dominated by hospitals of various sizes. Outpatient departments of hospitals serve as the entry point for patients seeking primary care. Fewer than 20% of patients have health insurance and 80% to 90% of patients pay out-of-pocket for medical expenses.

Case detection and treatment

After the rapid implementation of DOTS during the early 1990's, treatment success (95%), case detection (33%) and DOTS detection (29%) rates have remained almost constant since 1998. Case detection under DOTS can clearly be increased by extending coverage beyond 68%, but the ratio of DOTS detection to coverage ($29/68 = 43\%$) suggests that less than half of all new TB cases are being found within DOTS areas. The proportion of new TB cases that is multidrug-resistant has been estimated at around 5%, but that is based on surveys in just a few provinces. It therefore remains unclear whether drug resistance is a serious obstacle to TB control in China.

Implementation of national plan for TB control

Political commitment for TB control has been increasing in China. The State Council of China has released a 10-year National Plan for the Prevention and Control of TB (2001–2010), and the Ministry of Health has completed a 4-year implementation plan (2002–2005) and a work plan for 2002. These TB plans aim to facilitate DOTS expansion to 90% of the country and to double the current case detection rate (to reach 70%) by 2005, while keeping the same high level of treatment success. The NICC held its first meeting in 2002, and semi-annual meetings are planned for 2003 and beyond to strengthen political commitment.

With the release and implementation of the 10-year National Plan for the Prevention and Control of TB, all previous approaches to TB control have been harmonized into a standardized DOTS approach. National TB policies and guidelines have been formulated and are being used throughout the country. In 2002, China began to implement a number of new TB projects in support of their 10-year plan. Funds have come from several sources including the central government, a GOJ grant through JICA, a World Bank/DFID loan, and grants from CIDA and DFB. With this support, all provinces, municipalities and autonomous regions in China have started to implement DOTS. Most provinces have access to free TB drugs

PROGRESS IN TB CONTROL IN CHINA

Indicators

• Treatment success 2000 cohort	95%
• DOTS detection rate 2001	29%
• Proportion NTP budget available	90%
• Government contribution to available NTP funding, including loans	80%
• Government contribution to total TB control costs, including loans	72%
• Proportion government health expenditures used for TB*	0.3%

Constraints to achieving targets

- Insufficient political commitment by local governments resulting in inadequate local funding for DOTS
- Insufficient staff to implement DOTS, especially at central and provincial levels
- Poor referral of TB patients and weak collaboration between hospitals and TB dispensaries
- Weak TB institutions in many impoverished areas

Remedial actions needed

- Strengthen political commitment locally and expand international support
- Consider carrying out a formal evaluation of how local governments are implementing the national TB control plan
- Exploration of ways to provide incentives to local governments
- Experienced staff to be hired and given additional training
- Pilot test innovative approaches to strengthening collaboration between hospitals and TB dispensaries; implement successful strategies
- Essential equipment and vehicles to be provided in impoverished areas

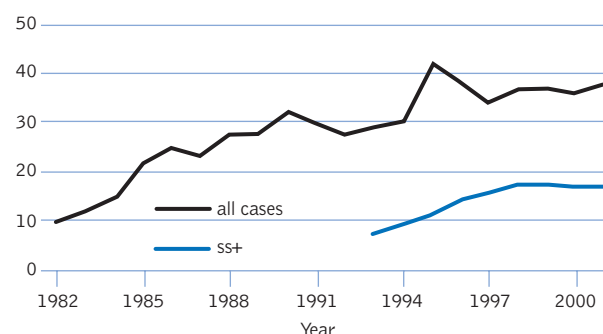
* See footnote 16, page 14.

CHINA

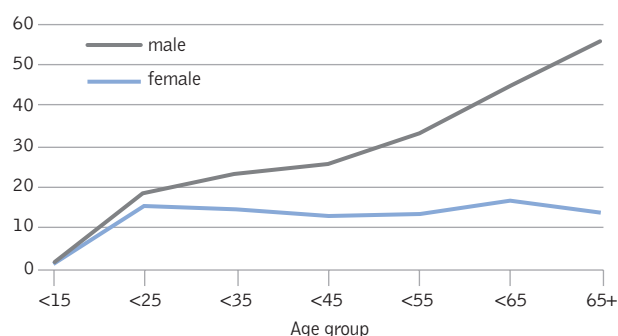
Population	1 284 971 910	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	2	DOTS population coverage (%)	64	64	68	68
Est. incidence (all cases/100 000 pop) ¹	113	Notification rate (all cases/100 000 pop)	36	36	36	38
Est. incidence (new ss+/100 000 pop) ¹	51	Notification rate (new ss+ cases/100 000 pop)	17	17	17	17
Est. % of adult (15–49y) TB cases HIV+ ¹	0.4	Case detection rate (new ss+, %)	34	33	33	33
Est. % of new cases multidrug resistant ²	5.3	DOTS detection rate (new ss+, %)	30	29	30	29
DOTS subnat'l reps (rec'd/expected)	28 / 28	DOTS treatment success rate (new ss+, %)	97	96	95	—

Notification rate (per 100 000 pop)

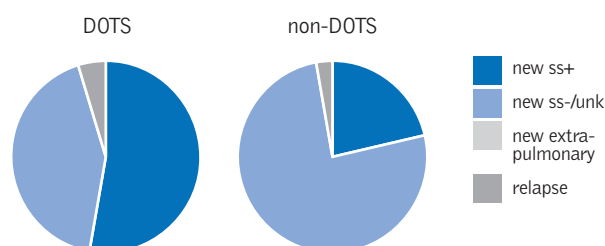
Notification (all cases) = 485 221 in 2001



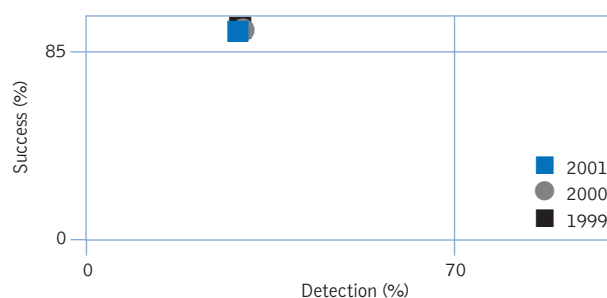
Notification rate by age and sex (new ss+)³



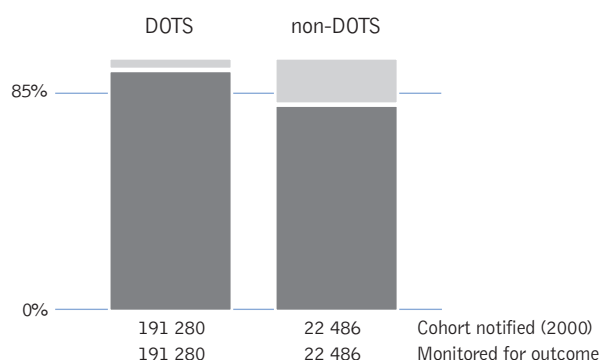
Case types notified



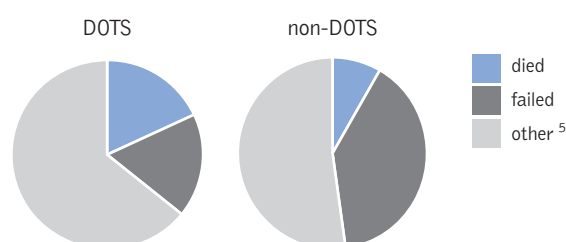
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

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4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

CHINA

through the GOJ/JICA and central government projects. Free diagnosis and treatment is being expanded gradually. Expansion of DOTS will accelerate with implementation of a recently approved project funded through the GFATM.

With greater political commitment and increased financial resources, China is poised to expand DOTS nationwide and increase the case detection rate towards the 70% target. However, a recent analysis by the MoH has identified key constraints that could prevent China from achieving the global case detection target. First, in spite of strong political commitment at the central level, political commitment at lower governmental levels is quite variable. With decentralization of financial management, the degree of political commitment at lower governmental levels directly affects whether local governments provide sufficient funds for TB control activities. Therefore it is important to strengthen political commitment for TB control in all provinces, cities/prefectures, and counties/districts.

Second, there are insufficient staff at the central and provincial levels. With the establishment of the National Centre for TB Control and Prevention in 2002, the central capacity to manage the national TB control programme has been strengthened. However, the centre currently has only a small number of experienced TB control staff and similar staff shortages exist in many provinces. Additional staff are needed to ensure that the new financial resources are used effectively.

Third, nearly all TB patients are initially diagnosed in the hospital system and only a fraction are referred to the DOTS programme, which operates through the TB dispensary system. This is a major constraint to increasing case detection under DOTS. The MoH is trying to strengthen the regulation mandating referral of TB suspects and cases from hospitals to the TB dispensary system, and is planning to draft a national law to enforce referral. Innovative approaches beyond the basic DOTS strategy will be needed to increase referral

and to improve the collaboration between hospitals and TB dispensaries so that case detection can increase.

Fourth, TB institutions are weak or non-existent in many areas. Approximately 20% of the counties in China do not have a TB dispensary, and many more counties have poorly functioning dispensaries because of poor infrastructure and lack of basic equipment and vehicles for supervision. New resources from various projects will improve the situation, but they cannot meet all the needs. Therefore, the MoH has estimated that with current funding, 30% of the counties – primarily in poor areas – will not have the necessary equipment or vehicles for supervision, and 10% of the counties will continue to have no TB dispensary or, at best, one that is poorly functioning.

Partnerships

To implement the 10-year TB control plan, China has combined growing political commitment with international financial and technical cooperation. The

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTP budget							
Drugs	10.5	8.8 ^a	—	—	1.7	—	—
Diagnostic supplies	6.4	3.7 ^a	—	—	1.2	—	1.5
Basic NTP activities	29.8	12.7 ^a	—	—	11.3	—	5.8
Treatment observation	—	—	—	—	—	—	—
Activities to increase case detection	6.8	3.4 ^a	—	—	1.6	—	1.8
Equipment / vehicles	4.1	2.4 ^a	—	—	1.3	—	0.4
Dedicated facilities	—	—	—	—	—	—	—
Dedicated staff	37.2	37.2 ^a	—	—	—	—	—
Total NTP budget	94.8	68.2 ^a	—	—	17.1	—	9.5
Infrastructure costs							
Shared staff / Shared facilities	—	—	—	—	—	—	—
TOTAL TB CONTROL COSTS*	94.8	68.2 ^a	—	—	17.1	—	9.5

— Indicates zero

* Includes NTP budget and infrastructure costs

^a Includes resources provided through a World Bank loan. DFID is contributing grant funds to assist with the interest payments on this loan.

central government has earmarked US\$ 4.8 million per year, primarily to provide TB drugs. The World Bank, a key partner since 1992 through a loan project for TB, has joined with DFID in 2002 to finance a new loan project covering 16 provinces. The GOJ through JICA is providing TB drugs and microscopes to 12 provinces beginning in 2002. CIDA has funded projects through WHO and KNCV in 3–5 provinces, and DFB is working in 3 provinces. The GFATM has approved a large TB grant

for China and this project will begin in 2003. Technical partners include WHO and KNCV, with WHO providing overall technical cooperation to the MoH and all partners. WHO has posted one TB expert in the country since 1999.

Financing

The financial situation of the NTP has improved dramatically during 2002 through the renewed provision of funding through a World Bank loan and the approval of funding through the GFATM.

Under the agreement with the GFATM, China will receive a total of US\$ 48 million, of which US\$ 13.5 million is expected in 2003. Still, the NTP will not be able to fully fund all planned activities. The major part of the expected funding gap of US\$ 9.5 million will be for core NTP activities, such as training and supervision. The NTP plans to intensify its advocacy at the provincial level to increase the budget allocated to TB from local governments.

Democratic Republic of the Congo

Overview of TB control system

The thrust of current health policy in DR Congo is to improve equity and access to essential services, including those for TB, through primary health care. TB services have been decentralized to peripheral health centres in an effort to reach geographically remote or disadvantaged sections of the population. Links and collaboration between public primary care services and the growing private sector remain limited.

Case detection and treatment

Given the long-lasting political instability in the country, and the lack of financial resources, summary indicators for DR Congo suggest that the NTLP is performing well. Of 1 224 quarterly reports (4 each from 306 units) expected at the central level, all but 128 were received. While the stated DOTS population coverage did not increase from 2000 to 2001, notifications did increase by 6 000 cases, almost all smear-positive, bringing the DOTS detection rate to 61%. It is unclear whether this growth represents the positive effects of improved case finding, or the adverse effects of HIV, internal displacement, and civil war.

The treatment success rate improved from 69% for the 1999 cohort to 78% for the 2000 cohort, largely as a result of a decrease in the number of patients for whom outcomes were not recorded. Defaulting (8%), and failure to report outcomes following transfer (4%), are the main reasons why treatment success is not higher.

Implementation of national plan for TB control

The NTLP has intensified advocacy, guided by the 2001–2005 strategic plan for DOTS expansion that was prepared in 2001, and endorsed by the govern-

ment and distributed in 2002. Although the plan continues to guide TB control efforts with the intent of reaching the global targets for case detection and cure by 2005, there are delays in implementation due to political instability, lack of financial and human resources, inefficiencies in the drug distribution system, and limited laboratory capacity. A National Programme Officer has been appointed to help overcome these constraints, though there is not yet an NICC. Staffing at the central office was improved but remains insufficient. Programme management countrywide has been improved with technical support from WHO and IUATLD, and through a monitoring mission by IUATLD in November 2002. In response to provision of drugs by the GDF, new guidelines were produced for both drug management and laboratory quality assurance. The recording and reporting system was strengthened through an internet connection and one additional staff officer.

There are plans in 2003 to increase health system capacity by various means, including the creation of three new coordination units (Western South Bandundu, Southern Occidental Kasai, and Kinshasa 2), provision of 100 new microscopes, improved drug distribution, and community-based DOTS projects in Kinshasa and Bas-Congo. However, all of these plans depend on obtaining adequate funds. Proposals developed in 2002 and 2003 will be submitted to the GFATM and other partners.

Partnerships

Overall technical support is provided by WHO, DFB, and IUATLD. For the period 2000–2005, the Ministry of Health has entrusted programme monitoring to IUATLD, acting on behalf of the Stop TB Partnership. Various donors are providing financial support, advice on management, and materials including drugs, reagents, and laboratory equipment.

PROGRESS IN TB CONTROL IN DR CONGO

Indicators

• Treatment success 2000 cohort	78%
• DOTS detection rate 2001	61%
• Proportion NTLP budget available	50%
• Government contribution to available NTLP funding, including loans	13%
• Government contribution to total TB control costs, including loans	36%
• Proportion government health expenditures used for TB*	1.7%

Constraints to achieving targets

- Funding gap of at least US\$ 5.4 million in 2003
- Ineffective drug distribution system leading to inadequate and late provision of drugs in provinces
- Lack of political commitment to TB at provincial level, coupled with instability resulting from war

Remedial actions needed to overcome constraints

- Resource mobilization if submission to the GFATM is unsuccessful
- Strengthened drug distribution system
- Formation of NICC and provincial task forces to strengthen political commitment

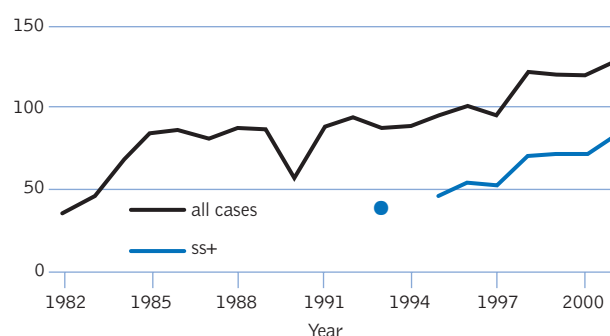
* See footnote 16, page 14.

DEMOCRATIC REPUBLIC OF THE CONGO

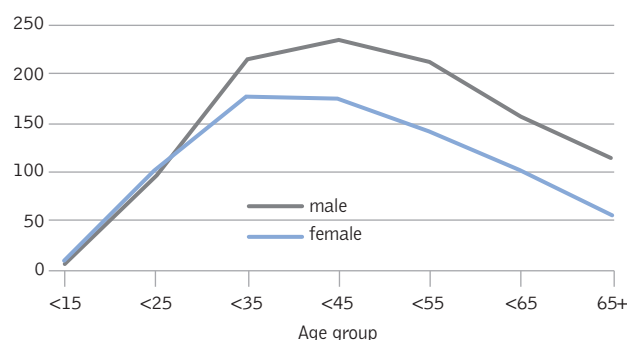
Population	52 521 894	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	12	DOTS population coverage (%)	60	62	70	70
Est. incidence (all cases/100 000 pop) ¹	302	Notification rate (all cases/100 000 pop)	122	120	119	127
Est. incidence (new ss+/100 000 pop) ¹	131	Notification rate (new ss+ cases/100 000 pop)	69	70	71	80
Est. % of adult (15–49y) TB cases HIV+ ¹	24	Case detection rate (new ss+, %)	58	57	56	61
Est. % of new cases multidrug resistant ²	1.5	DOTS detection rate (new ss+, %)	58	57	56	61
DOTS subnat'l reps (rec'd/expected)	1096 / 1224	DOTS treatment success rate (new ss+, %)	70	69	78	—

Notification rate (per 100 000 pop)

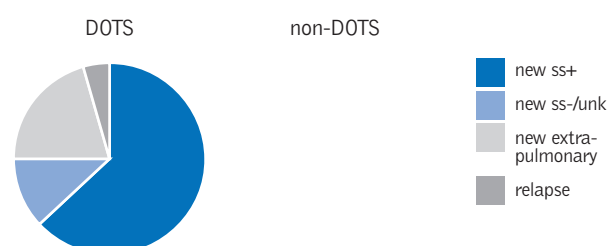
Notification (all cases) = 66 748 in 2001



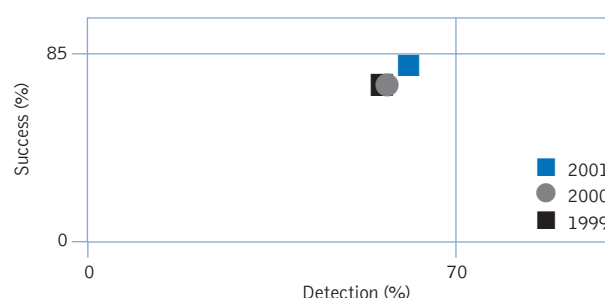
Notification rate by age and sex (new ss+)³



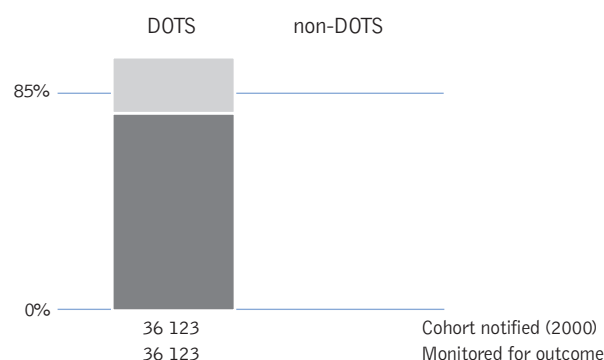
Case types notified



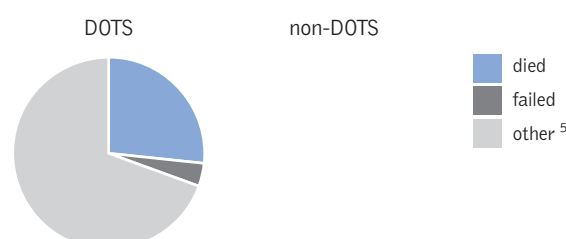
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

DEMOCRATIC REPUBLIC OF THE CONGO

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTLP budget							
Drugs	1.9	0.4	—	—	1.4	—	0.1
Diagnostic supplies	0.8	0.1	—	—	0.3	—	0.4
Basic NTLP activities	3.2	0.02	—	—	1.8	—	1.4
Treatment observation	0.2	—	—	—	0.02	—	0.2
Activities to increase case detection	0.4	—	—	—	0.1	—	0.3
Equipment / vehicles	3.6	—	—	—	0.8	—	2.8
Dedicated facilities	0.6	0.2	—	—	0.2	—	0.2
Dedicated staff	—	—	—	—	—	—	—
Total NTLP budget	10.7	0.7	—	—	4.6	—	5.4
Infrastructure costs							
Shared staff / Shared facilities	5.0 ^a	5.0 ^a	—	—	—	—	—
TOTAL TB CONTROL COSTS*	15.7 ^a	5.7 ^a	—	—	4.6	—	5.4

— Indicates zero

* Includes NTLP budget and infrastructure costs

^a WHO estimates, data not provided by the NTLP

These donors include DFB, Fondation Père Damien, TLMI, ALM, and ALTI. Other partners provide support through NGOs already based in the country, including the European Union and Coopération Belge via DFB, and the Ligue Nationale Anti-tuberculeuse et Antilèpreux du Congo. Solidarité Protestante works through TLMI. USAID directs funds through KNCV and IUATLD. Diagnostic and treatment centres that are part of the primary health care system are often supported by religious missions. The GDF provides drugs to cover part of the country.

Financing

The total budget of the NTLP for 2003 is US\$ 10.7 million. Most of this is for laboratory equipment and vehicles, basic NTLP activities (e.g. training, supervision), and drugs. The funding available amounts to US\$ 5.3 million, almost all of which comes from external donors. There is a funding gap of US\$ 5.4 million, which is mostly for laboratory equipment, vehicles, training and supervision. An application was submitted to the GFATM in late 2002; if approved, the NTLP will be fully funded in 2003.

The NTLP should consider ways of increasing the government contribution to the TB control budget, thereby decreasing the dependence on external donors.

The cost of shared staff and facilities needed for TB control has been estimated as US\$ 5.0 million in 2003. Country data on the availability and usage of facilities are not available. Under the assumption that sufficient capacity is available (i.e. the estimated costs are fully funded), the government contribution to TB control would be 36% of the total cost.

Ethiopia

Overview of TB control system

In 1997, Ethiopia established a 20-year Health Sector Development Programme (HSDP) to improve the health of all Ethiopians by enhancing access to a basic package of primary health care, focusing on cost-effective interventions, and expanding health services in rural areas. Health sector reform has integrated TB treatment into the general health services, and is progressively decentralizing service delivery to peripheral health units in woredas. The aim is to reach the most remote populations without compromising the quality of services. More than half the Ethiopian people live farther than 10 km from the nearest health facility, usually in regions with poor transportation infrastructure. Reaching these people is critical to fighting the spread of TB.

Case detection and treatment

The reported DOTS coverage in Ethiopia was adjusted from 85% in 2000 to 70% in 2001. This follows a more detailed assessment of coverage, and is not due to a decrease in the provision of DOTS. In 2001, DOTS was in place in parts of 47 out of 66 zones but, now that zones play a lesser role in TB control, coverage is determined by woreda; 522 out of 605 woredas provide DOTS in at least one health facility.

Nationwide, nearly 4 000 more cases were detected in 2001 than in 2000, of which 2 500 were smear-positive. Poor access to health facilities probably explains the low, if slowly increasing, case detection rate (42% for 2001).

The proportion of notified pulmonary cases that are smear-positive has increased steadily from 27% in 1997 to 36% in 2001, suggesting that diagnosis is improving, although the proportion is still lower than expected. The treatment success rate is also increas-

ing; from 72% of patients registered in 1997 to 81% of patients registered in 2001. If accurate, this is an impressive performance for a country with a high prevalence of HIV.

Implementation of national plan for TB control

Ethiopia has a 2002–2006 Strategic Plan for TB Control that includes the DOTS strategy. A standardized planning process has ensured rapid DOTS expansion. An NICC will be established before the end of 2003.

In October 2002, a joint TB and leprosy review was undertaken in partnership with WHO. The review confirmed that the TLCP is fully integrated into the general health services, and operates within the framework of the HSDP. How-

ever, cooperation between the TLCP and the HSDP could be improved. Despite these weaknesses, there has been a nearly 10-fold increase in the number of patients notified under DOTS from about 10 000 in 1994 to about 100 000 in 2001. Despite this growth, increasing case detection remains a priority that must be tackled through a combination of approaches including increasing health facility coverage, pilot testing of community-based strategies, and involving the growing private sector in TB control. In Addis Ababa, the capital of the country, there are 12 private hospitals and more than 450 private clinics.

The recording and reporting system is becoming increasingly reliable. However, it is likely that some patients who start treatment are not registered, in

PROGRESS IN TB CONTROL IN ETHIOPIA

Indicators

• Treatment success 2000 cohort	81%
• DOTS detection rate 2001	42%
• Proportion TLCP budget available	98%
• Government contribution to available TLCP funding, including loans	0%
• Government contribution to total TB control costs, including loans	19%
• Proportion government health expenditures used for TB*	1.6%

Constraints to achieving targets

- Funding gap of \$0.2 million in 2003
- Services have been decentralized to regions, zones, and woredas that do not yet have sufficient capacity to implement them; funds have flowed slowly from central to peripheral levels
- Poorly developed infrastructure (e.g. transport, communication, organization) means that access to TB services remains difficult in half the country
- Serious staffing problems include low morale, inadequate remuneration, migration of educated people to urban areas, and attraction to the private sector
- Deficiencies in management, supervision, training, equipment, and monitoring

Remedial actions needed

- Expansion of DOTS into all existing health facilities
- Development of community-based TB services in remote areas
- Strengthening of public-private partnerships
- Development of plan for recruitment, retention, and training of staff at all levels

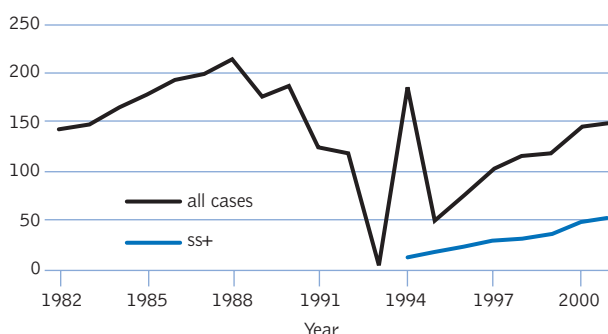
* See footnote 16, page 14.

ETHIOPIA

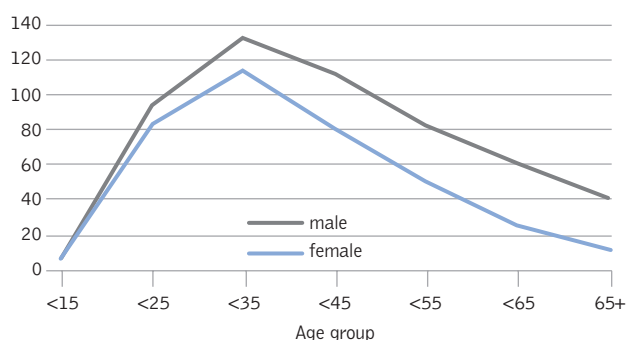
Population	64 459 311	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	10	DOTS population coverage (%)	64	63	85	70
Est. incidence (all cases/100 000 pop) ¹	292	Notification rate (all cases/100 000 pop)	116	117	145	147
Est. incidence (new ss+/100 000 pop) ¹	123	Notification rate (new ss+ cases/100 000 pop)	31	35	48	51
Est. % of adult (15–49y) TB cases HIV+ ¹	42	Case detection rate (new ss+, %)	28	30	41	42
Est. % of new cases multidrug resistant ²	2.3	DOTS detection rate (new ss+, %)	28	30	41	42
DOTS subnat'l reps (rec'd/expected)	245 / 248	DOTS treatment success rate (new ss+, %)	74	76	80	—

Notification rate (per 100 000 pop)

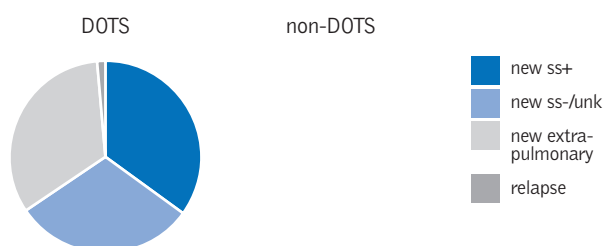
Notification (all cases) = 94 957 in 2001



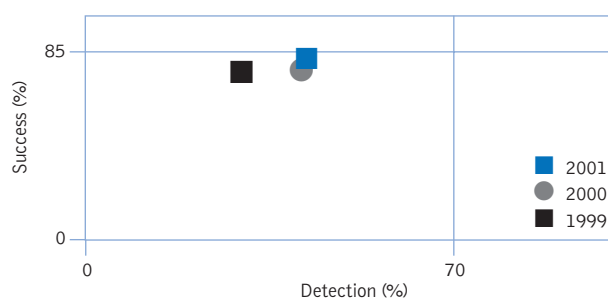
Notification rate by age and sex (new ss+)³



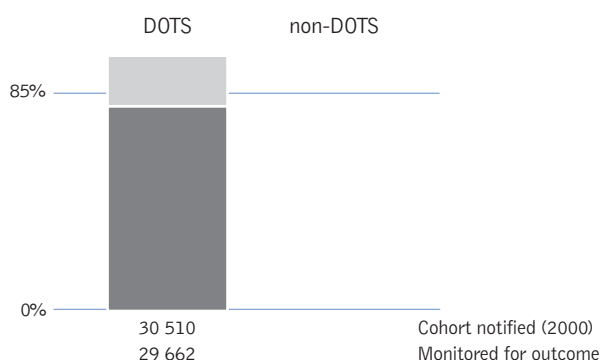
Case types notified



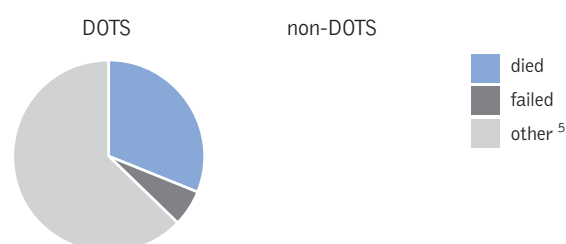
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

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3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

ETHIOPIA

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
TLCP budget							
Drugs	2.5	—	—	—	2.5	—	—
Diagnostic supplies	0.2	—	—	—	0.5	—	-0.3
Basic TLCP activities	2.8	—	—	—	2.5	—	0.3
Treatment observation	0.1	—	—	—	0.1	—	—
Activities to increase case detection	0.9	—	—	—	0.9	—	—
Equipment / vehicles	1.5	—	—	—	1.5	—	—
Dedicated facilities	—	—	—	—	—	—	—
Dedicated staff	0.4	—	—	—	0.2	—	0.2
Total TLCP budget	8.4	—	—	—	8.2	—	0.2
Infrastructure costs							
Shared staff / Shared facilities	2.0	2.0	—	—	—	—	—
TOTAL TB CONTROL COSTS*	10.4	2.0	—	—	8.2	—	0.2

— Indicates zero

* Includes TLCP budget and infrastructure costs

particular in-patients who die or interrupt their treatment during hospitalization. A programme to assure the quality of laboratory work has been established in 4 regions, and by Addis Ababa City Administration and Dire Dawa Administrative Council. Of the 456 government-run diagnostic centres, 396 are following WHO recommendations. However, the quality of TB diagnosis requires improvement and continuous monitoring.

Devolution of administrative power to the woredas has been coupled with the downsizing of Zonal Health Departments to Zonal Health Desks, and the establishment of Woreda Health Offices which have authority for planning and funding. Some staff previously posted at Zonal Health Departments are transferring to the Woreda Health Offices, but many of these offices are still understaffed. A limit has also been placed on new recruitment within the government health sector, which means that it may not be possible to correct existing staff shortages with outside funding. There remains, therefore, a major concern about whether the TLCP will have the

capacity to perform the necessary training, supervision, and monitoring activities.

Partnerships

National commitment to effective planning has improved the management of national resources and strengthened local ownership. The HSDP aims to facilitate international partnerships for TB control. Overall technical support for the country was provided by KNCV until the end of 2001. A WHO expert posted at the central level provides technical assistance. The Dutch government currently provides funds for anti-TB drugs and to cover some operational costs. However, once newly promised monies from the GFATM are distributed, the Dutch government will re-evaluate the direction and level of their support. GRLA provides funds for overall programme support and WHO contributes to some specific activities. MSF Belgium provides technical and financial support in the Somali Region. The dependence on donors is unavoidable in the short term, and technical and financial partnerships will probably need to continue for some years.

Financing

The total TLCP budget for 2003 is US\$ 8.4 million. Of this, US\$ 8.2 million will be funded by grants leaving a net funding gap of US\$ 0.2 million. The budget will allow for the expansion of the programme to 81% of all health centres and 31% of all health stations.

Ethiopia's strategic plan for 2002–2006 indicates that a total of US\$ 27.5 million is required over the five-year period. When the plan was developed, financing was to be provided mainly by the Dutch government and GLRA. Since then, Ethiopia has secured US\$ 27 million over three years from the GFATM for the management of TB linked to HIV. Within the proposal, the largest budget items are for drugs, equipment and diagnostic supplies, which will benefit the TB programme in general.

The government contributes to the total cost of TB control through the provision of shared staff and facilities. With the current caseload, the annual cost of these components has been determined as US\$ 2.0 million. It is, however, unclear whether the existing infrastructure will be sufficient as DOTS expands.

India

Overview of TB control system

India has 35 states and union territories divided into nearly 600 districts. Health institutions in each district generally include one hospital in the main town, Community Health Centres (CHC), Primary Health Centres (PHC), and varying numbers of sub-centres in each district that function through a district tuberculosis centre.

Although state governments are primarily responsible for health care, TB is one of several health programmes supported by central government funds. The Revised National TB Control Programme (RNTCP), designed by the Government of India in 1993 and launched in 1997, introduced DOTS and put TB control high on the public health agenda. This resulted in the allocation of more resources for TB control, improved laboratory diagnosis, and the adoption of directly observed treatment, standardized drug regimens, and reporting methods.

Case detection and treatment

TB remains the leading infectious cause of death in India, killing close to 500 000 people each year. India also has about 2 million new cases of TB each year, far more than any other country, and accounts for nearly one-third of the global burden of TB.

As DOTS population coverage increased from 30% in 2000 to 45% at the end of 2001, the number of smear-positive cases notified under DOTS nearly doubled. However, the number of smear-positive cases notified nationally (DOTS and non-DOTS together) changed little. This suggests that if India is to reach the target of 70% of cases detected under DOTS, the RNTCP must, as well as extending geographic coverage, continue to increase the proportion of cases being detected by the

DOTS programme within designated DOTS districts.

A detailed analysis of district-level data, planned for 2003, will help determine whether well-established DOTS districts are in fact continuing to improve case detection. This analysis, together with results from recent surveys of the prevalence of infection, will also help refine national and sub-national estimates of TB incidence, which will in turn provide the basis for a more confident assessment of the case detection rate.

The treatment success rate for patients registered in 2000 was 84%. According to these latest cohort data, defaulting (9%) is one of the major obstacles to reaching the 85% target.

Implementation of national plan for TB control

The current plan for the RNTCP covers the period 2001–2004 and aims to expand DOTS coverage to more than 80% of the country by 2004. By the end of 2002, about 550 million people, or 55% of the total population, had access to DOTS under the RNTCP, up from the 45% officially reported for 2001. With continued expansion, and continued funding, it is possible that India will be close to covering 100% of the population by 2005.

During 2002, the RNTCP increased staffing at central, state, and district levels to strengthen managerial, supervisory, and monitoring capacity, ensuring that effective TB services are

PROGRESS IN TB CONTROL IN INDIA

Indicators

● Treatment success 2000 cohort	84%
● DOTS detection rate 2001	23%
● Proportion RNTCP budget available	100%
● Government contribution to available RNTCP funding, including loans	90%
● Government contribution to total TB control costs, including loans	97%
● Proportion government health expenditures used for TB*	1.9%

Constraints to achieving targets

- Uncertain funding from 2005 onwards
- Challenge to maintain quality of TB services with rapid expansion to remaining 450 million population
- Lack of TB awareness in some parts of the community
- Decentralization without adequate local management, supervision, and monitoring

Remedial actions needed

- Continue efforts to obtain funding from the GFATM and other sources
- Increased supervision of implementation areas
- Strengthen public-private partnerships to standardize and facilitate the delivery of TB services
- Improve community awareness through a sustained mass media campaign and targeted IEC
- Central government to appoint additional staff and provide management training for RNTCP

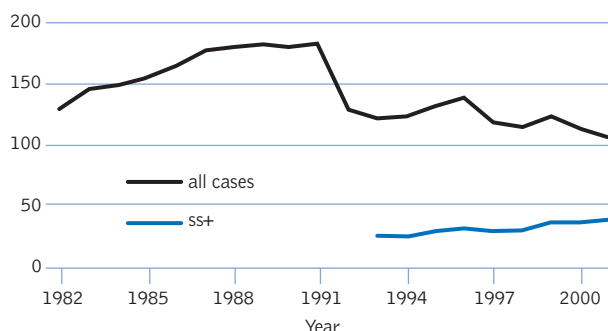
* See footnote 16, page 14.

INDIA

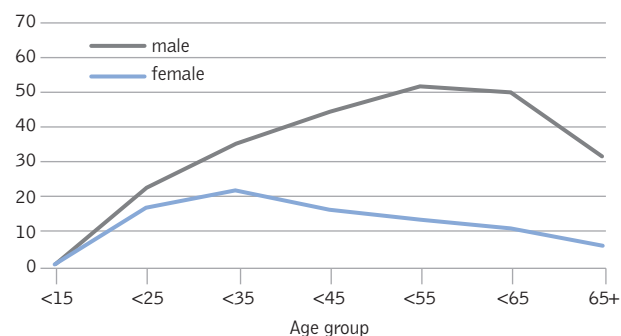
Population	1 025 096 104	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	1	DOTS population coverage (%)	9	14	30	45
Est. incidence (all cases/100 000 pop) ¹	178	Notification rate (all cases/100 000 pop)	113	123	111	106
Est. incidence (new ss+/100 000 pop) ¹	79	Notification rate (new ss+ cases/100 000 pop)	29	35	35	38
Est. % of adult (15–49y) TB cases HIV+ ¹	4	Case detection rate (new ss+, %)	34	43	43	47
Est. % of new cases multidrug resistant ²	3.4	DOTS detection rate (new ss+, %)	2	7	12	23
DOTS subnat'l reps (rec'd/expected)	795 / 795	DOTS treatment success rate (new ss+, %)	84	82	84	—

Notification rate (per 100 000 pop)

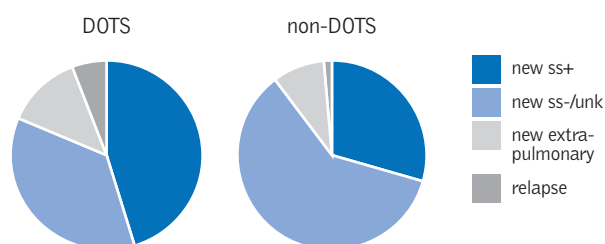
Notification (all cases) = 1 085 075 in 2001



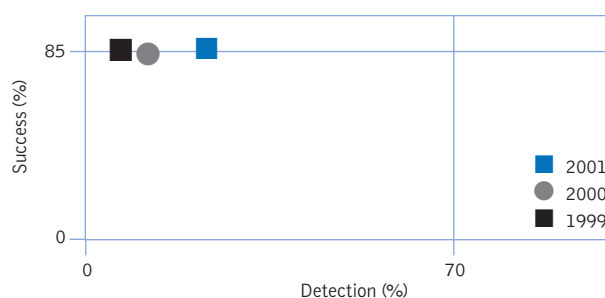
Notification rate by age and sex (new ss+)³



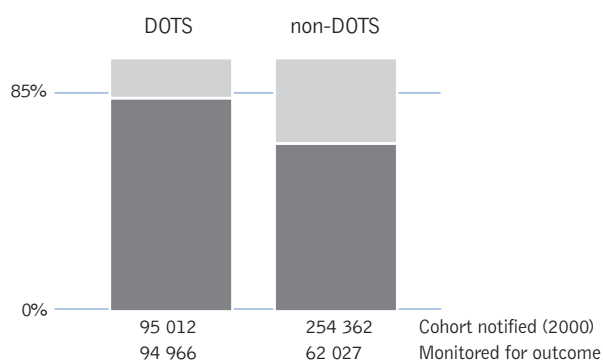
Case types notified



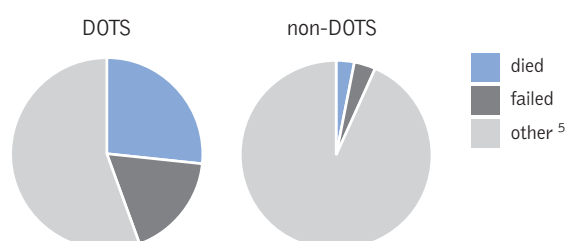
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

INDIA

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
RNTCP budget							
Drugs	10.4	1.3	—	—	2.0	7.1	—
Diagnostic supplies	3.6	1.3	—	—	0.2	2.1	—
Basic RNTCP activities	7.4	1.9	—	—	0.5	5.0	—
Treatment observation	—	—	—	—	—	—	—
Activities to increase case detection	3.9	0.4	—	—	0.2	3.3	—
Equipment / vehicles	0.3	0.1	—	—	0.02	0.2	—
Dedicated facilities	—	—	—	—	—	—	—
Dedicated staff	10.0	0.2	—	—	0.6	9.2	—
Total RNTCP budget	35.6	5.2	—	—	3.5	26.9	—
Infrastructure costs							
Shared staff / Shared facilities	65^a	65^a	—	—	—	—	—
TOTAL TB CONTROL COSTS *	100.6^a	70.2^a	—	—	3.5	26.9	—

— Indicates zero

* Includes RNTCP budget and infrastructure costs

a WHO estimates, data not provided by the RNTCP

maintained throughout the rapid expansion phase. A donor coordinating committee was formed in 1998, and the intention is to establish a functional NICC in 2003.

Laboratory resources are still being improved and there are plans to implement a new quality assurance policy in 2003 through the State TB Training and Demonstration Centres. Laboratory supervisors have recently been re-trained to ensure adequate supervision. Monitoring and surveillance were strengthened so that data can be used more easily to drive programmatic decisions. A web-based reporting system is under development, which will further strengthen monitoring capacity. In order to disseminate information, systematic programme evaluation is now coupled with quarterly meetings of all state and district TB officers.

An independent process for checking drug quality was introduced during 2002, and a buffer stock of drugs was created to ensure an uninterrupted supply. By the end of 2003, the goal is to establish drug stores in all remaining states.

The challenges now facing the RNTCP are to push toward nationwide DOTS coverage, and to improve case finding from the current rate of 50–60% to at least 70% within areas where DOTS is already implemented. To achieve this expansion in case finding, the programme will need to reach out to all clinics, dispensaries, and hospitals, including those in the private sector, and to patients who may have poor access to care, including the homeless and immigrants.

Partnerships

Technical support to India is provided by WHO, and includes a network of 60 locally recruited TB consultants who assist state and district officers to monitor and implement the programme. The World Bank has provided a loan to the Government of India, and DFID and DANIDA support DOTS expansion in one state each. CIDA and USAID also provide considerable programme support. The GFATM has approved an application to expand DOTS coverage to 3 new states totalling 56 million people beginning in 2003, and a proposal was

submitted in the 2nd round of GFATM applications to cover an additional 110 million people. The people in remaining non-DOTS districts have been asked to form district TB societies, and to prepare an action plan for RNTCP implementation. National efforts to build technical partnerships have been established with NGOs, medical colleges, community health volunteers, and the private sector. More than 300 NGOs have entered into structured agreements to provide DOTS services as part of the RNTCP. India is demonstrating how adequate resources can be effectively mobilized and coordinated to address TB control.

Financing

The World Bank has provided a US\$ 142.5 million loan to the Government of India, and DFID, DANIDA, the GFATM, and the GDF all support DOTS expansion. The financial situation of the RNTCP will, therefore, remain robust in 2003. Adequate staffing of the programme is ensured, with a substantial proportion of the budget (27%) allocated for dedicated RNTCP staff who

work within the general health service.

The cost of shared staff and facilities needed for TB control has been estimated as US\$ 65 million in 2003. Country data on the availability and usage of facilities are not available. Under the assumption that sufficient capacity is available (i.e. the estimated costs are fully funded), the government contribution to TB control would be 97% of the total cost.

A major challenge for the RNTCP will be the expiry of the current loan agreement with the World Bank at the end of the next fiscal year (2004). A potential funding gap of around US\$ 27 million will then need to be filled.

Indonesia

Overview of TB control system

Health services in Indonesia strive to include all sectors of society, stressing quality, equity, access, and affordability. Primary health care continues to be seen as the most appropriate path to achieving universal coverage. Decentralization of health services is under way, and will require more commitment to TB control by local government if good services are to be provided in provinces and districts.

Case detection and treatment

Recognising that the poor treatment success rates observed over the past few years were likely to be due in part to poor reporting, a special and exhaustive exercise was carried out to gather data during 2002. To do this, a team from the NTP visited districts and transferred information from patient cards to TB registers. This process allowed for the preparation of more complete provincial quarterly reports of case finding and treatment outcomes. Primarily as a result of this exercise, nearly 25 000 more cases were notified in 2001 than in 2000. However, there was no increase in new smear-positive cases notified, so the estimated case detection rate increased only slightly, from 19% to 21%.

A more striking result of the exercise was the dramatic improvement in the proportion of patients whose treatment outcome was evaluated – from 55% of the 1999 cohort to 96% of the 2000 cohort. As a result, the treatment success rate went from 50% to 87% for the same cohorts, meaning that Indonesia has met the 85% target. For TB control in Indonesia to be effective, it will be important to maintain this high quality of treatment and of recording and reporting. The data collection exercise in 2002 will be difficult to repeat; only with improved routine reporting will

the NTP be able to monitor the quality of treatment as DOTS continues to expand.

Implementation of national plan for TB control

Indonesia has a national movement for TB control called GERUNDAS. This movement focuses on advocacy and coordination throughout the health sector. GERUNDAS is well established centrally and in some provinces and districts, and plays a key role in planning for TB control.

The finalization and distribution in 2002 of the 5-year plan for 2002–2006 provided the framework for a comprehensive quality improvement programme for the NTP, including TB/HIV and TB/Leprosy monitoring and supervision. A key component of the plan is an analysis of the impact of decentrali-

zation in the Indonesian health sector. Under decentralization, budgetary authority is devolved to the provinces and districts, and the amount of funds available for programme support from the central level is drastically reduced. It is, therefore, important to ensure adequate and appropriate distribution and use of resources.

The central unit for TB was strengthened in Indonesia by the appointment of a new NTP manager, the recruitment of staff, and reorganization of the central GERUNDAS secretariat. However, there is a need to continue to build capacity centrally to ensure that the newly available funds will be used effectively.

Partnerships

External technical collaboration with the country is led by KNCV and WHO.

PROGRESS IN TB CONTROL IN INDONESIA

Indicator

• Treatment success 2000 cohort	87%
• DOTS detection rate 2001	21%
• Proportion NTP budget available	100%
• Government contribution to available NTP funding, including loans	26%
• Government contribution to total TB control costs, including loans	54%
• Proportion government health expenditures used for TB*	36%

Constraints to achieving targets

- Insufficient leadership in primary care, weak staffing, and inadequate financial management at provincial and district levels
- Interruptions in the supply of recommended drugs as a result of weak management and a lack of quality control
- Insufficient programme monitoring and surveillance due to weak reporting and supervision
- Limited involvement of public hospitals and private practitioners in TB control

Remedial actions needed

- Improved staffing, training, and supervision at all levels
- Implementation of the newly designed drug distribution and quality control system
- Increased involvement of selected private sector practitioners and facilities in TB control.

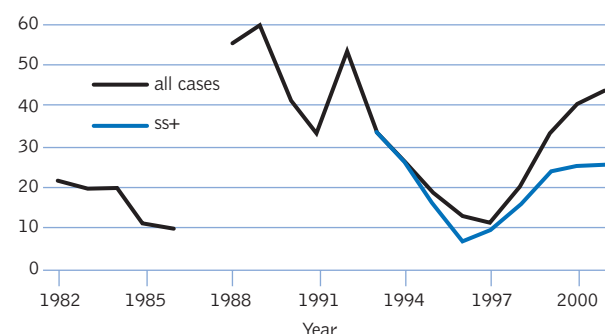
* See footnote 16, page 14.

INDONESIA

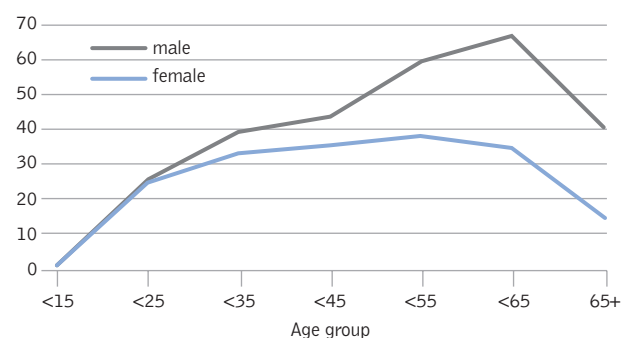
Population	214 839 719	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	3	DOTS population coverage (%)	80	90	98	98
Est. incidence (all cases/100 000 pop) ¹	271	Notification rate (all cases/100 000 pop)	20	33	40	43
Est. incidence (new ss+/100 000 pop) ¹	122	Notification rate (new ss+ cases/100 000 pop)	16	23	25	25
Est. % of adult (15–49y) TB cases HIV+ ¹	0.3	Case detection rate (new ss+, %)	12	19	20	21
Est. % of new cases multidrug resistant ²	0.7	DOTS detection rate (new ss+, %)	12	19	19	21
DOTS subnat'l reps (rec'd/expected)	1240 / 1368	DOTS treatment success rate (new ss+, %)	58	50	87	—

Notification rate (per 100 000 pop)

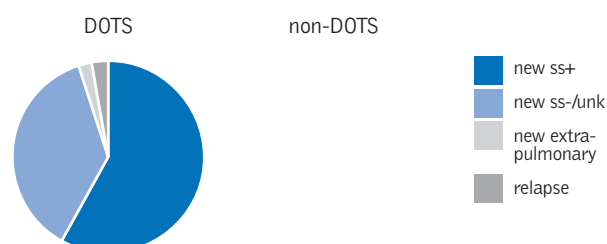
Notification (all cases) = 92 792 in 2001



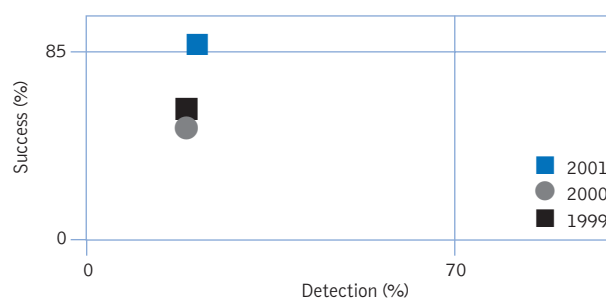
Notification rate by age and sex (new ss+)³



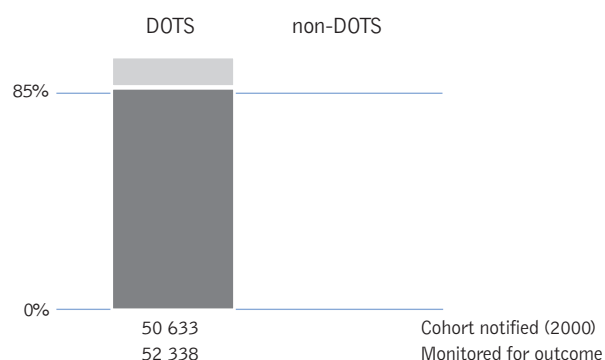
Case types notified



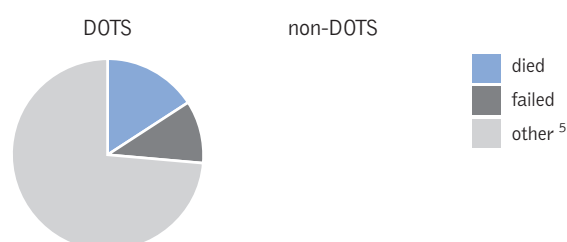
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

INDONESIA

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTP budget							
Drugs	6.0	6.0	—	—	—	—	—
Diagnostic supplies	0.2	—	—	—	0.2	—	—
Basic NTP activities	9.1	—	—	—	9.1	—	—
Treatment observation	3.2	—	—	—	3.2	—	—
Activities to increase case detection	1.0	—	—	—	1.0	—	—
Equipment / vehicles	1.3	—	—	—	1.3	—	—
Dedicated facilities	1.9	—	—	—	1.9	—	—
Dedicated staff	—	—	—	—	—	—	—
Total NTP budget	22.7	6.0	—	—	16.7	—	—
Infrastructure costs							
Shared staff	8.3	0.1	8.2	—	—	—	—
Shared facilities	5.5	1.5	4.0	—	—	—	—
TOTAL TB CONTROL COSTS*	36.5	7.6	12.2	—	16.7	—	—

— Indicates zero; n.e., not provided and/or not estimated

* Includes NTP budget and infrastructure costs

In addition to the GFATM, Indonesia receives support from the Dutch government for staff training, from TBCTA and CIDA for DOTS expansion, from the ADB for overall strengthening of the health system, from the GDF for drugs, and from NLR for combined leprosy and TB control activities.

Financing

Although 2002 was the second year that the decentralized budget system was implemented, virtually no information was available centrally about the amount of money allocated to TB by the

provinces and districts. Although some funds will be available at provincial and district levels in 2003, the major share of funding for the NTP will come from the GFATM. Indonesia will also receive drugs from the GDF to support 4 densely-populated provinces to create buffer stocks and to introduce 4-FDCs.

The total budget for the NTP in 2003 is US\$ 22.7 million. The cost of using shared staff and facilities within the general health system is a further US\$ 13.8 million.

Government funding (54% of total costs), together with grant support from

the Dutch Government, USAID, and KNCV, and a successful application to the GFATM for US\$ 70 million over five years, means that there is no budget deficit for 2003. Central government will continue to provide full funding for drugs, while provincial and district governments will provide support to the NTP in the form of staff and facilities. Experience with these funding arrangements during 2003 will show whether the current staffing at peripheral levels is sufficient to carry out the activities described in the 5-year plan.

Kenya

Overview of TB control system

Kenya's health policy seeks to improve equity and access to essential health services, including public health interventions such as TB care. Health sector reform in Kenya has enabled TB services to become more decentralized to peripheral health centres, with the goal of reaching those most disadvantaged. Although private practitioners play an increasing role in TB treatment, collaboration between primary care services and private providers remains limited.

Case detection and treatment

The number of TB cases (all forms) notified each year in Kenya continues to climb steadily, with no sign of a slow-down. However, the number of new smear-positive cases is growing less quickly. There are several possible explanations for this: cases in HIV-positive patients are less likely to be smear-positive; there may be over-diagnosis of extrapulmonary or smear-negative pulmonary TB; or the quality of diagnosis may be falling as the work-load increases. A better understanding of this phenomenon could be gained by analysis of subnational data – for example, by comparing districts with different levels of HIV, or with properly and poorly functioning laboratory services.

Kenya detected nearly half (47%) of the estimated new smear-positive TB cases in 2001. The number of cases registered for treatment in 2000 was almost as high as the number notified in 2000, and the small discrepancy is probably due to correction to the data base rather than to a failure to register cases for treatment. Treatment outcomes were recorded for all registered patients; 80% were successfully treated. Defaulting (9%), failure to report outcomes following transfer (6%), and deaths (5%) account for most of the

20% of patients for whom treatment was not successful. As in other African countries with high burdens of HIV, it is likely that improved follow-up of patients who default and transfer will lead to an increase in the number reported as having died, as well as an increase in the number successfully treated.

Implementation of national plan for TB control

A strategic plan for 2001–2005 has been finalized, with the goal of reaching the global targets by 2005. The NICC held meetings in 2002 to assist with implementation of the plan, and with the development of proposals to the GFATM. There are plans to restructure the NICC in 2003 to include members of training colleges who will advocate

for more professionals to be trained in TB control.

The progressive integration of TB control into the general health services continues to facilitate the expansion of DOTS. There are 4 staff members at the central level, including 1 person dedicated to advocacy and IEC, and all provinces and districts have programme coordinators. Despite a chronic lack of resources in some areas, such as for staff and laboratory facilities, strong managerial and operational structures are in place centrally, and these have helped to sustain effective TB services under increasingly difficult conditions. Though TB services are not always comprehensive, nationwide coverage is ensured through community participation, through a coordinated response to TB

PROGRESS IN TB CONTROL IN KENYA

Indicators

• Treatment success 2000 cohort	80%
• DOTS detection rate 2001	47%
• Proportion NTP budget available	68%
• Government contribution to available NTP funding, including loans	88%
• Government contribution to total TB control costs, including loans	79%
• Proportion government health expenditures used for TB*	8.6%

Major constraints to achieving targets

- Funding gap of US\$ 2.7 million in 2003
- Too few trained personnel at local level
- Private sector not fully engaged in delivering DOTS
- Insufficient public awareness about TB
- Rapid growth in the proportion of TB patients infected with HIV

Remedial actions needed

- If funding is not provided by the GFATM, funds will have to be sought elsewhere
- Improved recruitment and retention of local personnel
- Incentives to attract private practitioners to provide DOTS services
- Public awareness to be strengthened through a new communication strategy
- Technical assistance to strengthen programme evaluation, and to carry out research on service delivery
- Improved HIV testing and counselling

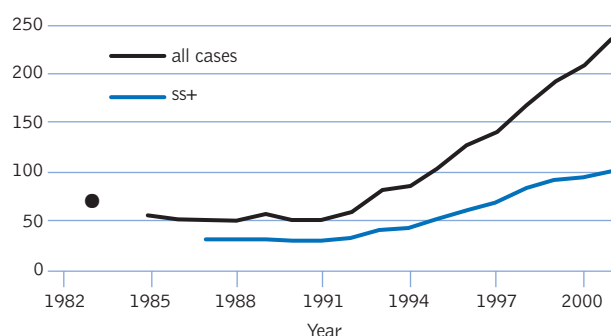
* See footnote 16, page 14.

KENYA

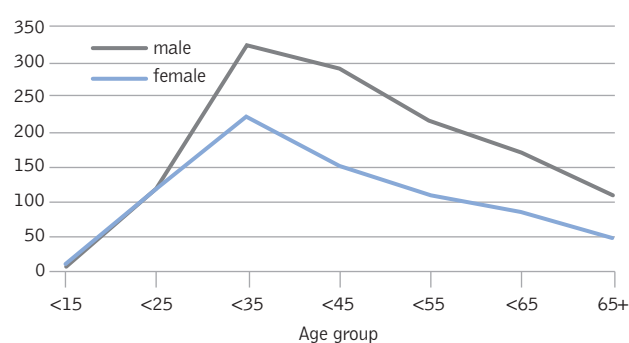
Population	31 293 322	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	11	DOTS population coverage (%)	100	100	100	100
Est. incidence (all cases/100 000 pop) ¹	515	Notification rate (all cases/100 000 pop)	167	191	209	233
Est. incidence (new ss+/100 000 pop) ¹	213	Notification rate (new ss+ cases/100 000 pop)	82	91	94	100
Est. % of adult (15–49y) TB cases HIV+ ¹	49	Case detection rate (new ss+, %)	58	56	50	47
Est. % of new cases multidrug resistant ²	0	DOTS detection rate (new ss+, %)	58	56	46	47
DOTS subnat'l reps (rec'd/expected)	Unknown	DOTS treatment success rate (new ss+, %)	77	78	80	—

Notification rate (per 100 000 pop)

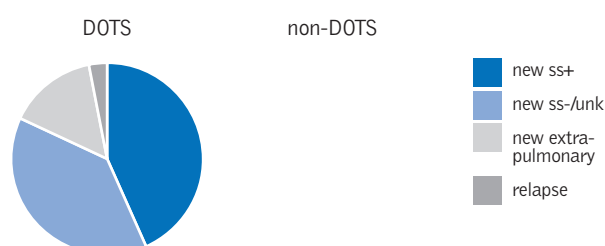
Notification (all cases) = 73 017 in 2001



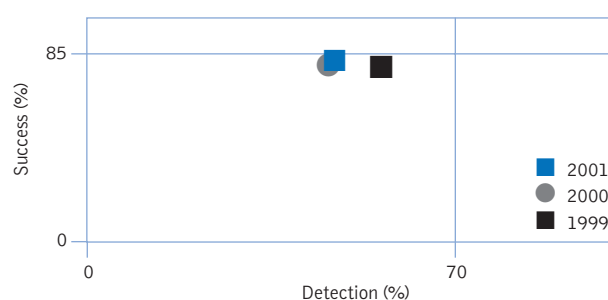
Notification rate by age and sex (new ss+)³



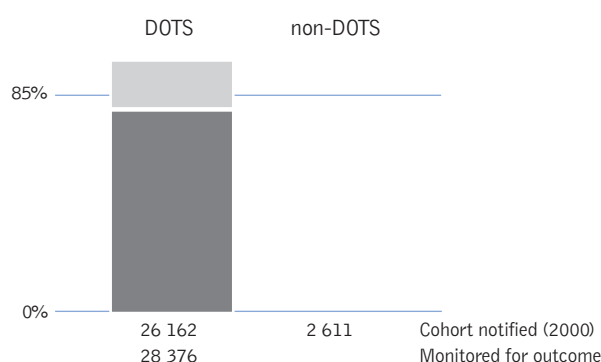
Case types notified



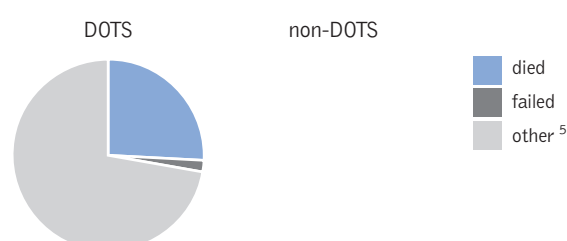
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

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4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

KENYA

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTP budget							
Drugs	3.2	1.8	—	0.3	—	0.9	0.2
Diagnostic supplies	0.4	0.4	—	—	—	—	—
Basic NTP activities	3.2	1.8	—	0.3	—	—	1.1
Treatment observation	0.1	0.05	—	0.05	—	—	—
Activities to increase case detection	0.4	0.06	—	0.06	—	—	0.3
Equipment / vehicles	1.1	—	—	—	—	—	1.1
Dedicated facilities	—	—	—	—	—	—	—
Dedicated staff	—	—	—	—	—	—	—
NTP budget requirements	8.4	4.1	—	0.7	—	0.9	2.7
Infrastructure costs							
Shared staff	4.9	4.9	—	—	—	—	—
Shared facilities	3.1^a	3.1^a	—	—	—	—	—
TOTAL TB CONTROL COSTS*	16.4^a	12.1^a	—	0.7	—	0.9	2.7

— Indicates zero

* Includes NTP budget and infrastructure costs

^a WHO estimates, data not provided by the NTP

and HIV/AIDS, and through pilot projects to encourage wider use of DOTS in the private sector. In 2002 a stakeholders' meeting was held to begin expanding community TB care from 2 districts to an additional 10 districts across the country. In 2003 and beyond, this scaling-up will continue until the whole country has community-based care. There are plans in 2003 to test a new TB/HIV collaboration in 1 district, and then to extend that collaboration to 10 other districts. This project should begin to address the stigma associated with seeking care for TB patients infected with HIV. New treatment and diagnostic centres were started in various areas of the country, and laboratory equipment was installed to further facilitate the decentralization of TB services. Reaching the nomadic population remains a challenge.

Application to the GFATM has stimulated the development of new initiatives to reach the 2005 global targets. These initiatives are designed to find and effectively treat patients living in urban slum areas, to provide TB services in

areas that are difficult to reach by working with resident NGOs, to develop a communications and awareness strategy (COMBI plan) to reach more TB suspects, and to further engage the private sector in the delivery of DOTS.

Partnerships

Partnerships are a key component of Kenya's success in combining international collaboration with effective community involvement for DOTS delivery and national political commitment. KNCV and WHO lead technical support for the country, along with CDC, USAID through the JSI Deliver Project and FHI, and CIDA through KNCV. CDC and CIDA now support programme activities previously funded by the Dutch government, including logistics, training, and an external programme advisor. The provision of TB drugs comes from a World Bank loan. Kenya has also enlarged its alliance with the World Bank in the TB and HIV/AIDS programmes through the DARE project. About 20% of the drugs have been purchased with a grant from the GDF for use in 2002. FHI is sup-

porting some laboratory and TB/HIV activities. Long-term funding is essential if targets are to be reached.

Financing

Total budget requirements for the NTP will be US\$ 8.4 million in 2003. Government contributions from the central-level budget and the social insurance system are US\$ 4.8 million. Together with US\$ 0.9 million from a World Bank loan, the existing resources amount to US\$ 5.7 million, or 69% of the total budget requirement. Kenya applied in late 2002 for GFATM funding to fill the remaining funding gap of US\$ 2.7 million. If this proposal is approved, the Kenyan NTP will have no funding gap for the coming fiscal year.

The cost of shared staff and facilities needed for TB control has been estimated as US\$ 8 million in 2003. Country data on the availability and use of facilities are not available. Under the assumption that sufficient capacity is available (i.e. the estimated costs are fully funded), the government contribution to TB control would be 79% of the total cost.

Mozambique

Overview of TB control system

The Mozambique National Tuberculosis Control Programme (NTCP) was launched in 1977, and tuberculosis and HIV/AIDS are among the health priorities of the Mozambican government. The NTCP has had strong political support, and is promoted by the MoH. The core functions of the NTCP are to ensure effective treatment of all cases, provide manuals and guidelines, train new staff, conduct surveillance of TB drug resistance, and analyse statistics countrywide. The National Directorate of Health has developed a plan to expand health services, with a component that is designed to ensure integration and coordination of supervision within provinces.

Case detection and treatment

Mozambique nominally has 100% DOTS coverage, but it is estimated that only 40% to 45% of the population have access to TB diagnosis, which is available in hospitals. This suggests that the incidence of TB in Mozambique may actually be higher than the recently revised estimate. Given the limited access to diagnosis it is unlikely that 68% of cases are being notified, as the case detection rate suggests.

Reports were received centrally from all districts for all quarters of 2001. Of patients notified in 2000, 99% were registered for treatment, and treatment outcomes were recorded for all those registered. The treatment success rate for the 2000 cohort was high (75%) for a setting with a high prevalence of HIV. HIV infection is almost certainly part of the reason for the high death rate (10%). The death rate among the large fraction of defaulters (11%) is unknown, but is likely to be high, especially for those infected with HIV.

Implementation of national plan for TB control

A comprehensive strategic plan for TB control through DOTS expansion has not yet been completed, though fragments of goals and objectives for various aspects of TB control have been developed with the intention of unifying them into an overall plan by February 2003. There is not yet an NICC, though there are plans in 2003 to organize a partners meeting out of which such a formalized structure may evolve.

Mozambique faces serious challenges in TB control, including lack of staff, irregular drug supply due to inaccessibility caused by poor roads, war, floods, and high HIV prevalence among TB cases. Decentralization has resulted in insufficient health services at peripheral levels due to a lack of staff and infrastructure. Treatment outcomes are therefore jeopardised by a lack of supervision during the continuation phase. There are 206 laboratories that perform direct smear microscopy, but

2 new reference culture laboratories are required. Laboratory staff are overworked, which may affect quality of smear reading in the future, and there is a lack of microscopes, trained technicians, and external quality control. In 2003, in addition to creating a comprehensive strategic plan for DOTS expansion, there are plans to train additional laboratory staff and coordinators, to expand DOTS to at least 1 district per region, and to prepare for a drug resistance survey in collaboration with WHO.

Partnerships

The coordination of partnerships is led by the MoH. The aim is to direct partners to areas or populations that currently have limited access to health services in general and TB services in particular. External technical support has been given by WHO and IUATLD for operations and TB staff development, and by GLRA.

PROGRESS IN TB CONTROL IN MOZAMBIQUE

Indicators

• Treatment success 2000 cohort	75%
• DOTS detection rate 2001	68%
• Proportion NTCP budget available	34%
• Government contribution to available NTCP funding, including loans	11%
• Government contribution to total TB control costs, including loans	not estimated
• Proportion government health expenditures allocated for TB*	not estimated

Major constraints to achieving targets

- Funding gap for NTCP budget of \$US 5.3 million in 2003
- DOTS expansion plan not completed
- Lack of trained staff at peripheral levels following decentralization

Remedial actions needed

- If the GFATM application is unsuccessful, funding will be needed from elsewhere
- Preparation of the DOTS expansion plan, and approval by government officials
- Increased funding and training for staff

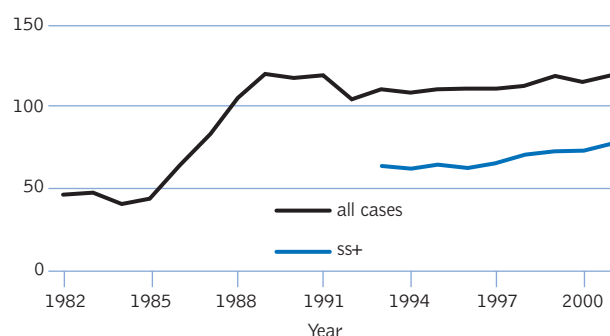
* See footnote 16, page 14.

MOZAMBIQUE

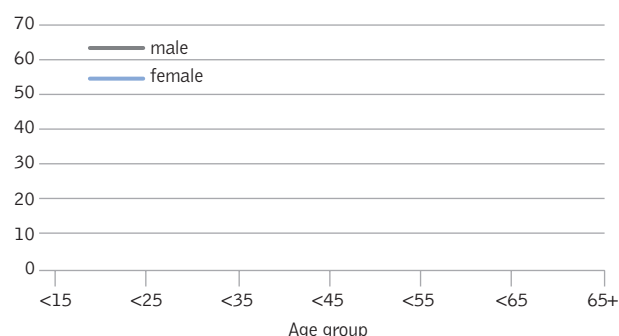
Population	18 644 433	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	27	DOTS population coverage (%)	95		100	100
Est. incidence (all cases/100 000 pop) ¹	265	Notification rate (all cases/100 000 pop)	112	119	116	119
Est. incidence (new ss+/100 000 pop) ¹	110	Notification rate (new ss+ cases/100 000 pop)	69	72	72	75
Est. % of adult (15–49y) TB cases HIV+ ¹	48	Case detection rate (new ss+, %)	65	66	67	68
Est. % of new cases multidrug resistant ²	3.5	DOTS detection rate (new ss+, %)	65		67	68
DOTS subnat'l reps (rec'd/expected)	600 / 600	DOTS treatment success rate (new ss+, %)		71	75	—

Notification rate (per 100 000 pop)

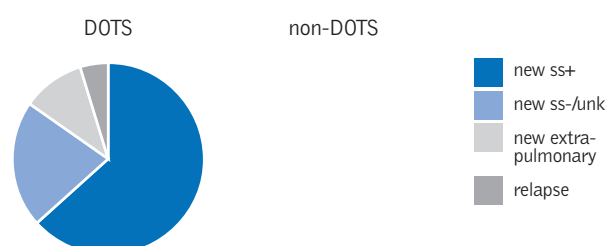
Notification (all cases) = 22 094 in 2001



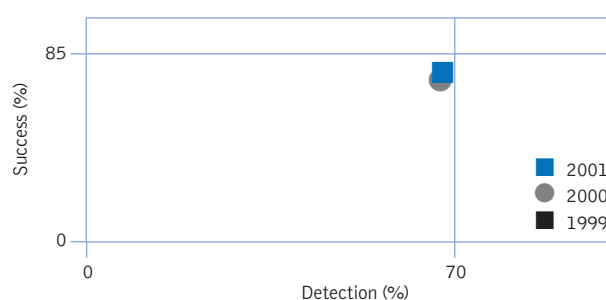
Notification rate by age and sex (new ss+)³



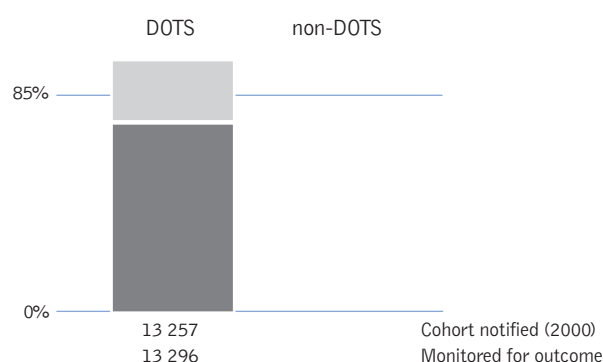
Case types notified



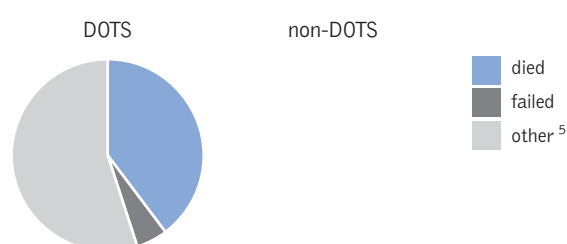
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

MOZAMBIQUE

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTCP budget							
Drugs			—	—		—	0.5
Diagnostic supplies			—	—		—	—
Basic NTCP activities			—	—		—	1.9
Treatment observation			—	—		—	—
Activities to increase case detection			—	—		—	2.0
Equipment / vehicles			—	—		—	0.6
Dedicated facilities			—	—		—	—
Dedicated staff			—	—		—	0.3
Total NTCP budget	8.0^a	0.3^a	—	—	2.4^a	—	5.3
Infrastructure costs							
Shared staff / Shared facilities	ne	ne	ne	ne	ne	ne	ne
TOTAL TB CONTROL COSTS*	ne	ne	ne	ne	ne	ne	ne

— Indicates zero; ne indicates not provided and/or not estimated

* Includes NTCP budget and infrastructure costs

a No breakdown for specific budget line items was available

Financing

The NTCP budget for 2003 is US\$ 8.0 million. Of this, only US\$ 2.7 million is currently available, US\$ 0.3 million from the central government and US\$ 2.4 million from grants. This leaves a significant gap of US\$ 5.3 million, much of which is for a countrywide IEC and advocacy campaign to increase case detection. The country has applied to the GFATM for funding to fill all existing budget gaps.

The cost of the shared general health services staff and facilities needed for delivery of TB control has not been estimated. It is not clear to what extent these costs will be covered in 2003, and it is not known whether additional funds will be needed.

Myanmar

Overview of TB control system

Myanmar has a strong health infrastructure and a large pool of well-educated and motivated health workers to deliver TB services, including trained community volunteers who supervise treatment at rural health centres and in patients' homes. The unit of management for TB control is the township, with an average population of 130 000. A high-level interministerial policy-making body on health matters – the National Health Committee – has recently been formed. The Ministry of Health has identified TB as being second only to malaria as a health priority.

Case detection and treatment

In the past, TB clinics offering DOTS services were hesitant to increase case-finding and IEC activities, not wanting to attract more patients than could be treated with the drugs available. The secure drug supply resulting from GDF assistance has changed that; in 2001, case detection under DOTS increased from 49% to 59% even though DOTS coverage increased only slightly from 77% to 84% of the population. The ratio of detection to coverage (59/84 = 70%) suggests that the target detection rate has been reached within DOTS areas.

Treatment success remains high (82%) and close to the 85% target, although there has been no improvement over the last 4 cohorts. Educating patients about the possibility of transferring to another treatment unit could help reduce the default rate (9%).

Implementation of national plan for TB control

Myanmar has a 5-year strategic plan for DOTS expansion covering the period from 2001–2005, as well as an NICC. Improved funding through international

donors and the GFATM permitted the expansion of DOTS to 51 more townships in 2002, bringing the total to 310 of the 324 townships. Zonal TB centres function in all but one zone, though there are plans to establish a centre in the remaining zone before 2005. Only 10% of the population were living outside DOTS townships at the end of 2002, and there are plans to bring DOTS to this population by mid-2003. However, it is likely that the time and/or cost required to travel from remote areas to the nearest diagnostic centre will mean that less than 100% of the population really has access to diagnosis and treatment.

Inadequate numbers of staff at the district level are reflected in the 239 positions that remain vacant (about 23% of the total NTP staff). It is expected that training of NGO members will lead to better implementation of DOTS through improved treatment supervision, IEC, and referral capabilities.

After many years of drug shortages, and the sporadic provision of drugs by WHO, UNDP, and other bilateral donors, a reliable drug supply (meeting 80% of the total requirement for 2 years) is now ensured through the GDF. Efforts are under way to extend that supply beyond

PROGRESS IN TB CONTROL IN MYANMAR

Indicators

• Treatment success 2000 cohort	82%
• DOTS detection rate 2001	59%
• Proportion NTP budget available	32%
• Government contribution to available NTP funding, including loans	10%
• Government contribution to total TB control costs, including loans	not estimated
• Proportion of government health expenditures used for TB	not estimated

Constraints to achieving targets

- Funding gap of \$2.1 million in 2003
- Shortage of TB clinics, laboratory equipment, and vehicles at central and peripheral levels
- Insufficient numbers and training of technical, supervisory and managerial staff, particularly with respect to quality assurance of laboratory services, logistics, supervision, data management, and epidemiology
- Lack of community awareness about TB and available services
- Poor access to diagnosis and treatment in remote areas

Remedial actions needed

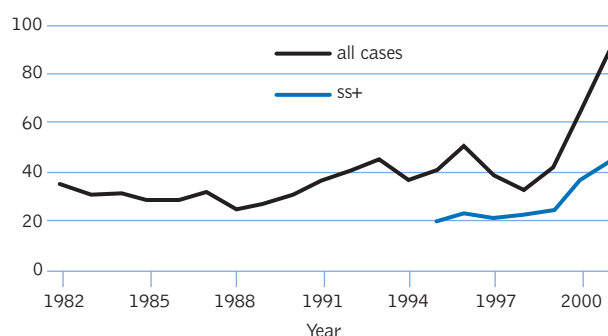
- If the GFATM does not provide funds, they will have to be sought elsewhere
- Purchase of vehicles, improved clinics, and more laboratory equipment
- Appointment of staff to sanctioned posts, and creation of new posts
- Training of technical staff, supervisors, and managers
- Comprehensive IEC strategy to expand community awareness of TB
- Improved access to diagnosis in remote areas by opening of new diagnostic centres, or mechanism for sending sputum samples or slides to laboratories
- Scale-up of successful initiatives with NGOs, private health care providers, and the HIV programme

MYANMAR

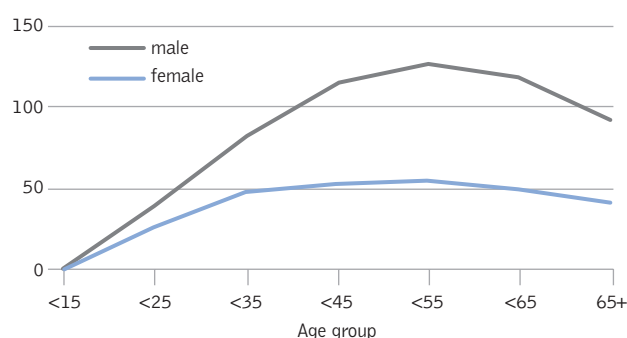
Population	48 363 536	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	19	DOTS population coverage (%)	60	64	77	84
Est. incidence (all cases/100 000 pop) ¹	162	Notification rate (all cases/100 000 pop)	32	42	65	89
Est. incidence (new ss+/100 000 pop) ¹	73	Notification rate (new ss+ cases/100 000 pop)	22	24	36	44
Est. % of adult (15–49y) TB cases HIV+ ¹	11	Case detection rate (new ss+, %)	29	32	49	60
Est. % of new cases multidrug resistant ²	1.5	DOTS detection rate (new ss+, %)	29	32	49	59
DOTS subnat'l reps (rec'd/expected)	973 / 993	DOTS treatment success rate (new ss+, %)	82	81	82	—

Notification rate (per 100 000 pop)

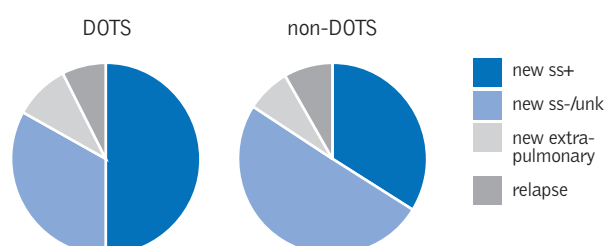
Notification (all cases) = 42 838 in 2001



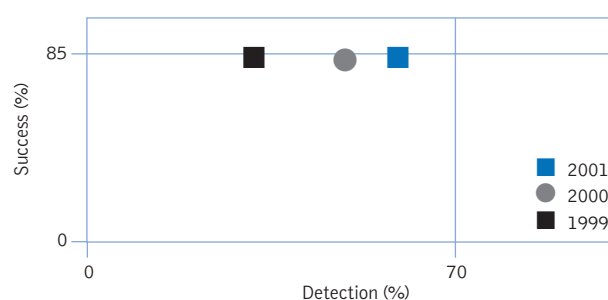
Notification rate by age and sex (new ss+)³



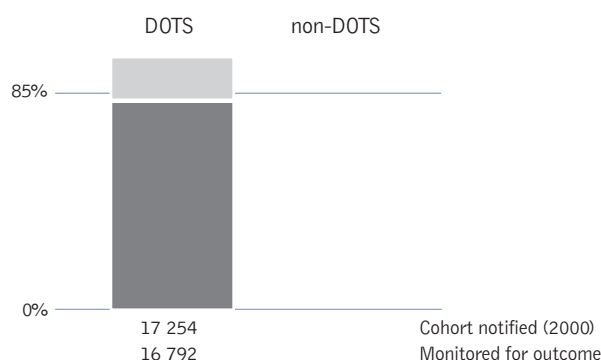
Case types notified



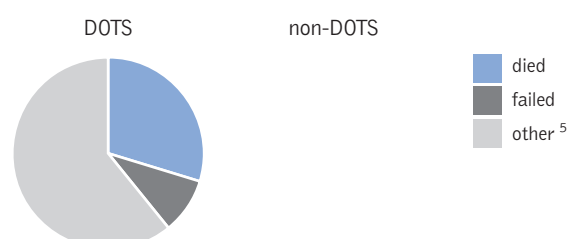
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

MYANMAR

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTP budget							
Drugs	0.4	0.1	—	—	0.3	—	—
Diagnostic supplies	0.3	—	—	—	0.1	—	0.2
Basic NTP activities	0.6	—	—	—	0.1	—	0.5
Treatment observation	—	—	—	—	—	—	—
Activities to increase case detection	0.4	—	—	—	—	—	0.4
Equipment / vehicles	1.2	—	—	—	0.4	—	0.8
Dedicated facilities	—	—	—	—	—	—	—
Dedicated staff	0.2	—	—	—	—	—	0.2
Total NTP budget	3.1	0.1	—	—	0.9	—	2.1
Infrastructure costs							
Shared staff / Shared facilities	ne ^a	ne	ne	—	—	—	—
TOTAL TB CONTROL COSTS*	ne	ne	ne	—	0.9	—	ne

— Indicates zero; ne indicates not provided and/or not estimated

* Includes NTP budget and infrastructure costs

a The costs for shared staff and facilities are difficult to determine due to the existence of various exchange rates for the local currency, and have not been estimated by WHO.

2003. Although the agreement with the GDF removes a substantial barrier to successful DOTS implementation in Myanmar, the NTP still faces severe infrastructure problems, especially shortages of laboratory equipment and transportation. A central drug store was built in 2002. There are plans to procure vehicles in 2003 for use in drug distribution as well as for supervisory visits to facilities (including laboratories). Laboratory infrastructure (i.e. buildings and new binocular microscopes) and staff training at the township laboratories were improved, but technical capacity and infrastructure at the central reference laboratory remain inadequate to carry out the supervision, training, quality assurance, and culture and drug susceptibility testing that are required.

Of continuing concern is the fact that some general practitioners and health facilities outside the NTP do not

practice DOTS. The NTP will continue to address this problem in 2003 through pilot projects designed to expand the collaboration between the public and private sectors. In some townships successful discussions have been held with local private practitioners, encouraging them to refer TB suspects to the NTP. A number of non-DOTS public health facilities reported to the NTP for the first time in 2001.

With assistance from WHO, an external monitoring mission was held in September 2002 to review the TB programme, resulting in plans in 2003 to strengthen internal review mechanisms. Negotiations with various donors are currently under way and may lead to additional funding for TB control.

Partnerships

IUATLD and WHO lead external technical support to the country. The JFAP is conducting research. Three national

NGOs—the Myanmar Maternal and Child Welfare Association, the Myanmar Red Cross Society, and the Myanmar Medical Association—provide direct observation of treatment for DOTS patients. Financial support is provided by the Myanmar government, WHO, UNDP, the GDF, and various bilateral donors.

Financing

The NTP budget for 2003 is US\$ 3.1 million. Of this, only US\$ 1 million is currently available. This means that, despite securing funding for drugs through the GDF, the overall financial situation of the NTP remains precarious. The lack of funds is especially severe for new equipment (vehicles and microscopes) that is urgently needed. Myanmar applied to the GFATM towards the end of 2002. If the proposal is approved, the NTP will be able to cover the substantial funding gap of US\$ 2.1 million.

Nigeria

Overview of TB control system

Nigeria is engaged in health sector reforms to strengthen the primary health care infrastructure, and to build human resource and operational capacity throughout the country. The Federal Ministry of Health supports states through its technical and strategic planning functions. Planning and implementation of health services, including those for TB, are largely decentralized to the 36 autonomous states and the Federal Capital Territory. A national sustainability workshop in October 2001 culminated in the Abuja Declaration to Stop TB, which was endorsed by federal and state representatives and other partners. In 2001, the federal government established a multisectoral committee to mount a concerted response to the worsening TB/HIV epidemic. Efforts in 2002 have focused largely on securing political commitment and funding for TB.

Case detection and treatment

In 2001, 55% of the population were living in LGAs implementing DOTS, compared to 47% in 2000. This increase in population coverage was not reflected by a similar increase in the proportion of estimated cases detected under DOTS, which increased only one percentage point to 16%, and is still far lower than the population covered. Although there is uncertainty about the true incidence of TB in Nigeria, the ratio of case detection to coverage ($16/55 = 29\%$) suggests that the case detection rate is well below the target of 70% within DOTS designated areas.

2001 was the first year for which notifications (but not treatment outcomes) were reported by non-DOTS states, an encouraging step towards the introduction of DOTS in these states.

A high default rate (11%) continues

to keep the treatment success rate (79%) below the global target.

Implementation of national plan for TB control

In 2001, Nigeria developed a 2001–2005 plan for TB control and established an NICC in 2002. The plan was endorsed in 2002 by the federal MoH and by the NICC, paving the way for expansion of DOTS beyond the 45% of LGAs (350 out of 774) that were implementing DOTS in 2002. If funds become available, the total number of LGAs implementing DOTS is expected to increase in 2003 to 498 (64%). Introducing DOTS to all states remains the most significant challenge, complicated by problems of infrastructure, funding, staffing, and political commitment. Nearly all states have DOTS expansion

plans, but those plans remain largely unfunded and, therefore, not implemented. Much of the time and effort in 2002 was aimed at trying to secure additional funds to run the TB control programme and to implement the planned activities.

Several measures were undertaken in 2002 to increase political commitment for TB: a high-level advocacy mission to the federal government was organized in collaboration with WHO/Stop TB, and state-level advocacy for TB was increased. Despite these efforts to strengthen political commitment, there are still barriers to operating the TB programme, including the fact that the central unit office of the NTBLCP planned for Abuja in 2001 has not yet been opened.

An assessment of laboratory facili-

PROGRESS IN TB CONTROL IN NIGERIA

Indicators

• Treatment success 2000 cohort	79%
• DOTS detection rate 2001	16%
• Proportion NTBLCP budget available	47%
• Government contribution to available NTBLCP funding, including loans	20%
• Government contribution to total TB control costs, including loans	55%
• Proportion of government health expenditures allocated for TB*	12%

Constraints to achieving targets

- Funding gap of US\$ 5.7 million in 2003
- Insufficient federal and state commitment to TB control
- Insufficient budget for, and poor condition of, primary health care infrastructure
- Irregular funding from local governments for health facilities and their staff
- Low staff motivation and no funds for supervision
- Limited involvement of hospitals in DOTS

Remedial actions needed

- If application to GFATM is unsuccessful, funds will have to be sought elsewhere
- Strengthen political support at federal and local levels to increase funding
- Supervision and regular payment to improve staff motivation
- Engage hospitals in DOTS service to improve case detection and the quality of treatment

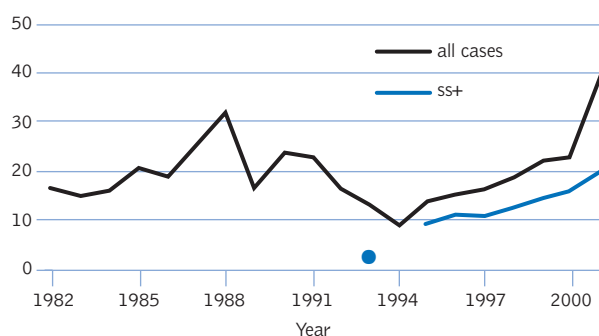
* See footnote 16, page 14.

NIGERIA

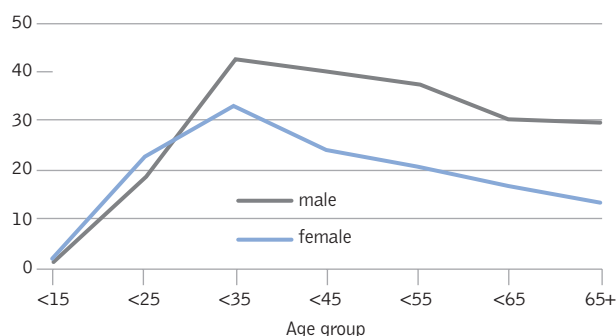
Population	116 929 137	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	5	DOTS population coverage (%)	45	45	47	55
Est. incidence (all cases/100 000 pop) ¹	235	Notification rate (all cases/100 000 pop)	19	22	23	39
Est. incidence (new ss+/100 000 pop) ¹	102	Notification rate (new ss+ cases/100 000 pop)	12	14	15	20
Est. % of adult (15–49y) TB cases HIV+ ¹	24	Case detection rate (new ss+, %)	13	15	15	20
Est. % of new cases multidrug resistant ²	1.7	DOTS detection rate (new ss+, %)	13	15	15	16
DOTS subnat'l reps (rec'd/expected)	Unknown	DOTS treatment success rate (new ss+, %)	73	75	79	—

Notification rate (per 100 000 pop)

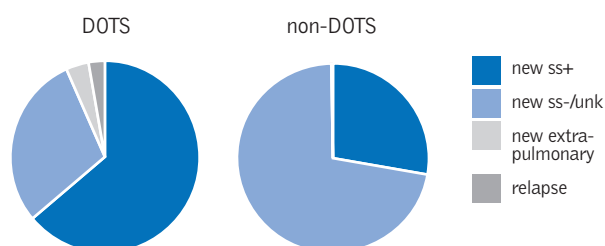
Notification (all cases) = 45 842 in 2001



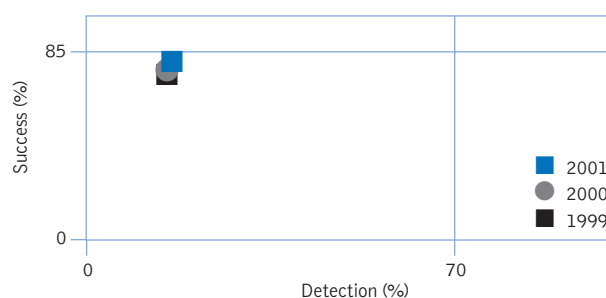
Notification rate by age and sex (new ss+)³



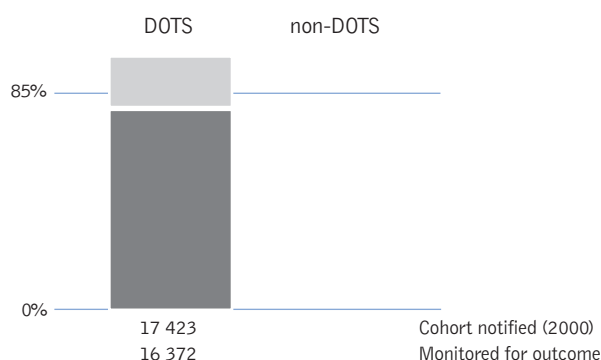
Case types notified



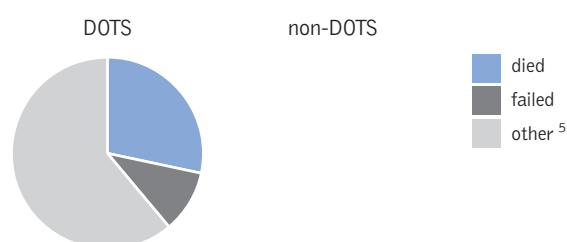
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

NIGERIA

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTBLCP budget							
Drugs	2.9	0.3	—	—	2.6	—	—
Diagnostic supplies	1.9 ^a	0.5	—	—	0.3	—	1.1
Basic NTBLCP activities	3.5	0.1	—	—	0.5	—	2.9
Treatment observation	0.1	—	—	—	—	—	0.1
Activities to increase case detection	0.3	0.02	—	—	0.02	—	0.2
Equipment / vehicles	2.1	0.04	—	—	0.7	—	1.4
Dedicated facilities	—	—	—	—	—	—	—
Dedicated staff	—	—	—	—	—	—	—
Total NTBLCP budget	10.8 ^b	1.0	—	—	4.1	—	5.7
Infrastructure costs							
Shared staff / Shared facilities	11.0 ^c	11.0 ^c	—	—	—	—	
TOTAL TB CONTROL COSTS*	21.8 ^c	12.0 ^c	—	—	4.1	—	5.7

— Indicates zero; ne indicates not provided and/or not estimated

* Includes NTBLCP budget and infrastructure costs

^a Includes budget requirements for laboratory equipment

^b Total includes cost of some dedicated NTBLCP staff that are funded by the government. The budget for these staff was not available to WHO

^c WHO estimates, data not provided by the NTBLCP

ties was conducted in 2002, revealing the poor condition of these facilities at the PHC level, and the lack of laboratory equipment and reagents for AFB microscopy. If funds are available in 2003, there are plans to enhance laboratory performance, including an increase in the number of microscopy centres from 417 to 615 and the establishment of 1 national and 6 zonal TB reference laboratories. There are also plans to expand the reporting network to include hospitals (including those in academic settings), police, prisons, and the army, and to increase the current network of treatment centres from 1 605 to 2 233.

Training of staff in DOTS implementation took place in 2002, and Zonal Professional Officers were appointed. Given additional finds, there is the capacity to train more of the existing health service providers (e.g. NGOs, mission hospitals, private practitioners, pharmacies, traditional healers, voluntary HIV counselling and testing cen-

tres), so they can provide DOTS or refer patients to a DOTS facility. The number of private and NGO hospitals delivering DOTS services could, with adequate funds, increase from 20 to 57 facilities during 2003.

Nearly all of Nigeria's plans for 2003 are contingent on obtaining sufficient funding. Where DOTS is being implemented now, it is due largely to the support of NGOs and donors, and the importance of partners in implementing DOTS cannot be overstated. Increased state ownership (and budget allocation) for TB control will also be required if DOTS is to be expanded, and this objective has been captured in the strategic plan.

Partnerships

The NTBLCP depends very heavily on donors. In 2002, it was estimated that only about 5% of funding came from federal or state governments. Overall technical collaboration for the country is led by a coalition of partners, includ-

ing WHO and NGOs. Most of the partners supporting TB activities were initially leprosy NGOs that have recently started to diversify. However, they do not have enough capacity to support the planned DOTS expansion. A total of 27 of the 37 states are receiving funding from various partners as follows: GLRA has been financially and technically supporting DOTS implementation in 272 LGAs in 14 states. TB drug procurement is organized by GLRA in these states. The NLR is involved in 100 LGAs in 4 states. The Damien Foundation has been fully supporting TB control in 2 states. DFID is funding DOTS implementation in 1 state, within the framework of a project developing PHC services. The IUATLD is assisting in Lagos state by providing technical assistance and covering some training costs. CIDA's donation through WHO allowed for DOTS expansion into 6 additional states. The GDF provided drugs for 30 000 patients in 2002, plus a 1-year buffer stock.

Financing

The total budget for the NTBLCP in 2003 is US\$ 10.8 million. Of this, only US\$ 5.1 million is currently available, leaving a gap of US\$ 5.7 million. Most existing funding is being provided by donors, with relatively small contributions from the government. There is no funding gap for drugs because of GDF support, but there are large gaps for several other budget items, and these are particularly severe for equipment such as microscopes and vehicles. These

items are crucial to ensuring adequate diagnosis and general programme quality through regular supervision and monitoring, which are essential to the effective use of the drugs now available. With such a low government health budget, it is unlikely that additional government resources can be obtained. Nigeria applied for GFATM funding in late 2002. Approval of the proposal would allow the NTBLCP to completely fill the existing funding gaps.

The cost of the general health serv-

ices staff and facilities needed for delivery of TB control has been estimated by WHO as approximately US\$ 11 million in 2003, with no funding gap (i.e. it is assumed that health services capacity is sufficient to treat the number of patients that it is expected will be detected in 2003). There are neither local estimates of these costs, nor of the extent to which these costs will be covered in 2003.

Pakistan

Overview of TB control system

Pakistan consists of four provinces (Balochistan, NWFP, Punjab, Sindh), Northern Areas, and Azad Jammu Kashmir. Since the national devolution plan was launched in August 2001, districts have begun to assume responsibility for all public activities, including health care services. However, because devolution is still in its early stages, districts have not yet developed the necessary capacity to deliver care. Community health services therefore remain weak.

Although Pakistan adopted the DOTS strategy in 1995 with demonstration activities in some areas, DOTS expansion did not begin in earnest until 2000 when the government rehabilitated provincial TB programmes through the World Bank's Social Action Programme Project II (SAPP II), a project that runs across the social sector, including health. DOTS is continuing to expand and the overall TB control system is steadily improving.

Case detection and treatment

From 2000 to 2001, both DOTS coverage and the DOTS detection rate for Pakistan approximately doubled. However, the DOTS detection rate (5.6%) is still well below population coverage (24%), suggesting that many patients do not have access to DOTS within designated DOTS areas. Pakistan continues to report a high proportion of smear-negative pulmonary cases, both in DOTS and non-DOTS areas, leaving the quality of diagnosis in question.

Comparing 1999 and 2000 cohorts, a 4% fall in the proportion of patients defaulting was matched by a 4% increase in the treatment success rate (to 74%). The default rate (17%) is still the highest among HBCs, and a major barrier to reaching the global target of 85%. The NTP therefore needs to

address problems of case finding, diagnosis and treatment.

Implementation of national plan for TB control

The NTP has a strategic plan for DOTS expansion for 2001–2005, and the MoH has established an NICC. The Government of Pakistan issued the Islamabad Declaration to announce TB as a national emergency in March 2001 in an effort to gain support for NTP activities.

In 2002, Pakistan made steady progress toward achieving the objectives laid out in their strategic plan, which encompasses interagency and intersectoral coordination. The growth in patients recruited under DOTS has been impressive, thanks in particular to Lady Health Workers operating in rural

communities. Balochistan, NWFP, and Sindh are planning to achieve full DOTS coverage by 2003. Punjab – the largest province in Pakistan – is planning to achieve full DOTS coverage by 2005. However, expanding DOTS in Pakistan remains a challenge for the following reasons: health service infrastructure is weak, there are obstacles to decentralization, there are too few staff at district level, and TB control in urban areas is poorly integrated within primary care services.

Strengthening of staff capacity through better recruitment and training in DOTS areas should help to improve monitoring and supervision, although additional vehicles are also needed. Access to DOTS services will be improved by expanding into 17 new districts with at least one clinic in each prov-

PROGRESS IN TB CONTROL IN PAKISTAN

Indicators

• Treatment success 2000 cohort	74%
• DOTS detection rate 2001	5.6%
• Proportion NTP budget available	85%
• Government contribution to available NTP funding, including loans	59%
• Government contribution to total TB control costs, including loans	88%
• Proportion of government health expenditures used for TB*	3.8%

Constraints to achieving targets

- Funding gap of US\$ 0.8 million in 2003
- Risk that TB will not remain a priority following the shift of TB planning authority to district level
- Weak management and supervision capacity at provincial and district levels
- Involvement of private sector without adequate training in DOTS patient management

Remedial actions needed

- Resource mobilization to fill funding gap
- Maintain political will, especially at district level, during decentralization
- Recruit and retain staff who will be trained in management, supervision, and planning
- Training for private sector practitioners through continuing education and in medical, nursing, and public health schools

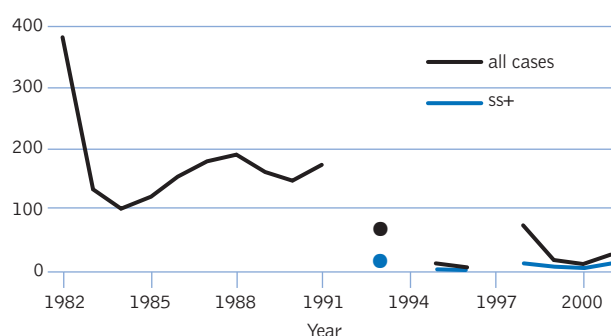
* See footnote 16, page 14.

PAKISTAN

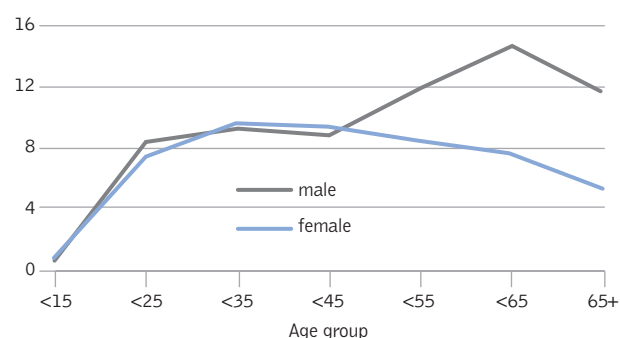
Population	144 971 432	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	6	DOTS population coverage (%)	8	8	9	24
Est. incidence (all cases/100 000 pop) ¹	171	Notification rate (all cases/100 000 pop)	67	15	7.8	23
Est. incidence (new ss+/100 000 pop) ¹	77	Notification rate (new ss+ cases/100 000 pop)	11	4.5	2.3	7.5
Est. % of adult (15–49y) TB cases HIV+ ¹	0.6	Case detection rate (new ss+, %)	14	5.8	3	9.8
Est. % of new cases multidrug resistant ²	9.6	DOTS detection rate (new ss+, %)	4	2	3	6
DOTS subnat'l reps (rec'd/expected)	15 / 15	DOTS treatment success rate (new ss+, %)	66	70	74	—

Notification rate (per 100 000 pop)

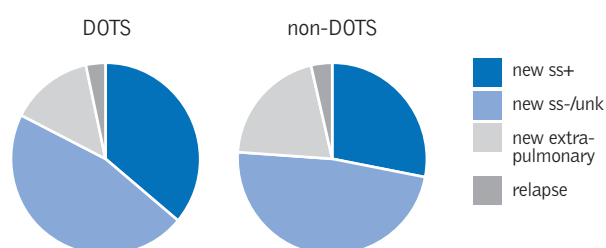
Notification (all cases) = 34 066 in 2001



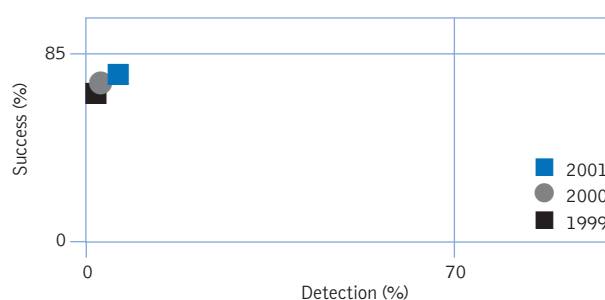
Notification rate by age and sex (new ss+)³



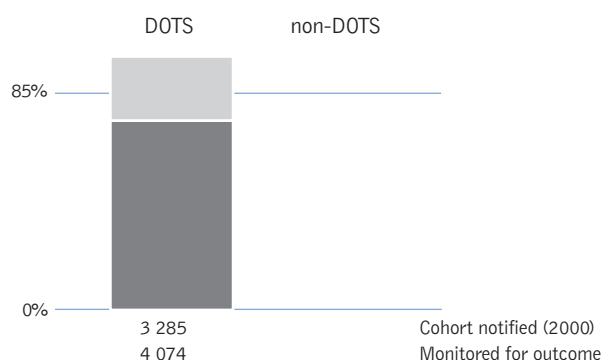
Case types notified



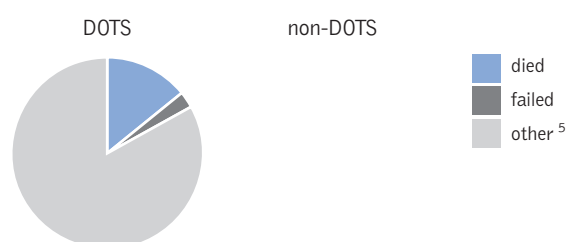
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

PAKISTAN

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTP budget							
Drugs	3.5	—	1.6	—	1.9	—	—
Diagnostic supplies	0.5	—	0.2	—	—	—	0.3
Basic NTP activities	1.2	—	0.8	—	—	—	0.4
Treatment observation	—	—	—	—	—	—	—
Activities to increase case detection	0.2	—	0.1	—	—	—	0.1
Equipment / vehicles	—	—	—	—	—	—	—
Dedicated facilities	—	—	—	—	—	—	—
Dedicated staff	—	—	—	—	—	—	—
Total NTP budget	5.4	—	2.7	—	1.9	—	0.8
Infrastructure costs							
Shared staff / Shared facilities	16.5^a	16.5^a		—	—	—	—
TOTAL TB CONTROL COSTS*	21.9^a	19.2^a		—	1.9	—	0.8

— Indicates zero; ne indicates not provided and/or not estimated

* Includes NTP budget and infrastructure costs

^a WHO estimates, data not provided by the NTP

ince, through more involvement of NGOs (in particular the Anti-TB Association, which already runs a number of TB clinics and hospitals), and through improved public-private partnerships.

Standardization of the generic pharmaceuticals available in the health system is not complete. Variable drug regimens could affect treatment outcomes, and contribute to the development of resistance.

The large numbers of refugees from the Afghan civil war are still affecting NTP activities in Pakistan. Although many refugees are now returning to Afghanistan, they remain in border regions where health infrastructure is very weak. There is a local NGO with operations on both sides of the border in Jalalabad and Peshawar, but services remain inadequate in all other border regions. Pakistan will be one of the key participants in a workshop on Afghan returnees and internally displaced persons planned for early 2003 in Kabul, Afghanistan.

Partnerships

WHO and IUATLD lead the technical collaboration with Pakistan. CIDA, DFID, GLRA, and JICA support DOTS expansion. Major international funding partners are World Bank, DFID, EU, and other partners (all funding SAPP II), and CIDA, DFID, GLRA, JICA, and USAID. The GDF also provides TB drugs, and Pakistan has submitted an application to the GFATM.

Financing

The total NTP budget for 2003 is US\$ 5.4 million. All provinces have allocated TB budgets for the next three years (primarily regular budget funds). Of the NTP total budget, US\$ 4.6 million is currently available, leaving a gap of US\$ 0.8 million. The gap is for basic NTP activities such as training and supervision, diagnostic supplies, and activities to increase case detection. Drug supplies are fully funded, assisted by US\$ 1.9 million from the GDF.

Two factors should be considered

when evaluating the NTP budget data. First, following decentralization, all government contributions are from peripheral government budgets. It is possible that the introduction of decentralized budgeting will cause problems with disbursement of funds for individual disease control programmes, including TB. This means that part of the US\$ 2.7 million of expected government funding may not become available. Secondly, the budget for programme activities apart from supplies appears very low for a high-burden country of this size.

The cost of the general health services staff and facilities needed for TB control has been estimated by WHO as approximately US\$ 16.5 million in 2003, with no funding gap (i.e. it is assumed that health services capacity is sufficient to treat the number of patients that it is expected will be detected in 2003). There are neither local estimates of these costs, nor of the extent to which these costs will be covered in 2003.

The Philippines

Overview of TB control system

Health sector reforms in the Philippines have clearly delineated the role of the central, regional, and provincial governments so as to draw on the comparative advantage of each in delivering health care. The central level of the NTP is responsible for overall programme management including the formulation of technical norms, provision of technical support, and drug procurement. Regional offices are responsible for co-ordination with, and for providing technical support to, provincial governments. Structural reforms have recently focused on the Department of Health, leading to a reengineering of the department's operations and a dramatic reduction in personnel at the central level.

Case detection and treatment

The steep decline in all case notifications since 1990 is very unlikely to represent a real fall in incidence, but the slower decrease in smear-positive cases since 1993 might do so. The Philippines has already reached one of the two global targets, with a treatment success rate of 88% (though successful treatment was not confirmed by smear examination in 15% of patients). However, despite almost complete DOTS coverage (95%), only 57% of estimated new smear-positive cases were notified by the programme in 2001. The ratio of case detection to coverage (average 55%) has not changed significantly during the process of DOTS implementation. Either the incidence estimate is too high, or a significant fraction of patients still do not use DOTS because the programme has not had time to establish its reputation. The DOTS programme in 2001 was also reluctant to add more patients than could be treated with the limited supply of drugs.

Implementation of national plan for TB control

The NTP has proved to be dynamic and flexible as it continually adapts to a changing health system. The Philippines has both a strategic plan for DOTS expansion and an NICC that worked to strengthen collaboration between partners in 2002.

The number of managerial staff was increased at the central level from 3 to 12 people. Capacity was also increased regionally so that technical assistance could, in turn, be provided to provinces, and to local government units. The NTP has stimulated ownership and commitment for TB control among both health workers and the community at all levels, with particular attention given to fostering ownership in the most peripheral administrative unit, the *barrangay*.

Following decentralization, provinces began to make TB control a priority. The budget for TB drugs was recently shifted from the centre to regions. Training workshops that reinforced DOTS treatment guidelines were held at provincial level, though follow-up is now needed to ensure that the training results in better monitoring and supervision.

An advocacy campaign was launched to promote ownership of the TB problem by all sectors, and social mobilization and community participation programmes were used to promote the allocation of local funds for TB control. As a result of these efforts, TB was named as one of the nation's 5 priority diseases. Despite these successes, the commitment of local government units to maintaining the quality of DOTS remains fragile because elections (held

PROGRESS IN TB CONTROL IN THE PHILIPPINES

Indicators

● Treatment success 2000 cohort	88%
● DOTS detection rate 2001	57%
● Proportion NTP budget available	36%
● Government contribution to available NTP funding, including loans	100%
● Government contribution to total TB control costs, including loans	74%
● Proportion government health expenditures allocated for TB*	1.5%

Constraints to achieving targets

- Funding gap of US\$ 5.8 million in 2003
- TB programme monitoring and supervision inadequate in quality and quantity
- Low public awareness, and weak advocacy and education for TB control, leading to under-use of DOTS services
- Underdevelopment of private sector as a partner in delivery of DOTS

Remedial actions needed

- If GFATM application is unsuccessful, funds will have to be sought elsewhere
- Monitoring and supervision to be improved by establishing guidelines on supervision and by reinforcing the central monitoring team
- Public awareness to be improved through intensified advocacy for TB screening, diagnosis, and treatment
- Private sector to become more involved through widespread implementation of new guidelines on DOTS treatment

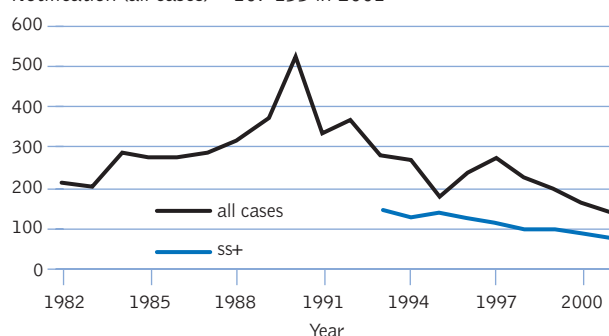
* See footnote 16, page 14.

PHILIPPINES

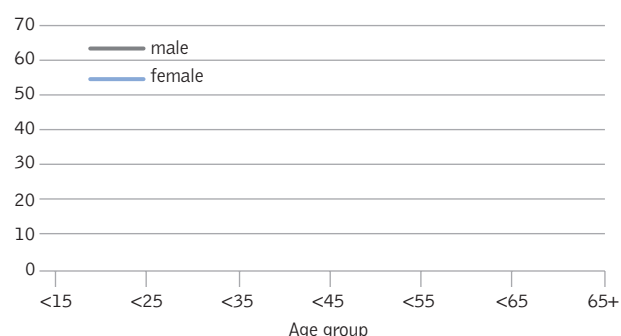
Population	77 130 778	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	8	DOTS population coverage (%)	17	43	90	95
Est. incidence (all cases/100 000 pop) ¹	297	Notification rate (all cases/100 000 pop)	223	197	159	139
Est. incidence (new ss+/100 000 pop) ¹	133	Notification rate (new ss+ cases/100 000 pop)	96	99	89	77
Est. % of adult (15–49y) TB cases HIV+ ¹	0.4	Case detection rate (new ss+, %)	68	72	65	58
Est. % of new cases multidrug resistant ²	3.2	DOTS detection rate (new ss+, %)	10	20	48	58
DOTS subnat'l reps (rec'd/expected)	Unknown	DOTS treatment success rate (new ss+, %)	84	87	88	—

Notification rate (per 100 000 pop)

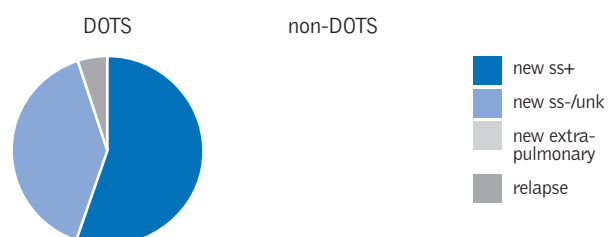
Notification (all cases) = 107 133 in 2001



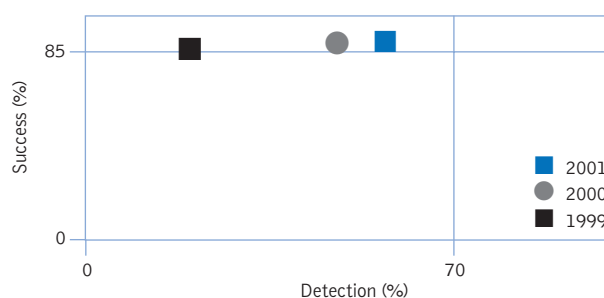
Notification rate by age and sex (new ss+)³



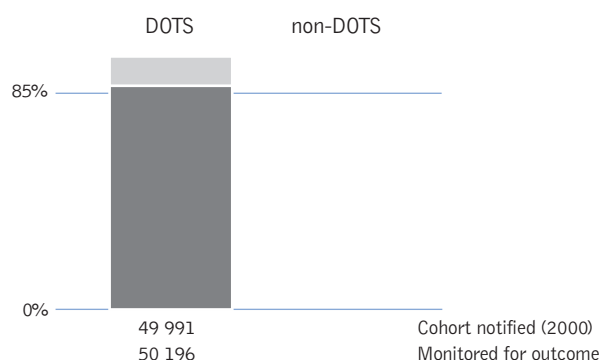
Case types notified



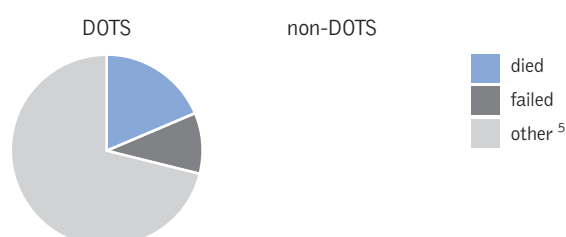
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

PHILIPPINES

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTP budget							
Drugs	3.3			—	—	—	—
Diagnostic supplies	1.3			—	—	—	1.3
Basic NTP activities	0.3			—	—	—	0.3
Treatment observation	—			—	—	—	—
Activities to increase case detection	4.1			—	—	—	4.1
Equipment / vehicles	0.1			—	—	—	0.1
Dedicated facilities	—			—	—	—	—
Dedicated staff	—			—	—	—	—
Total NTP budget	9.1	3.3^a		—	—	—	5.8
Infrastructure costs							
Shared staff / Shared facilities	13.2^b	13.2^b		—	—	—	—
TOTAL TB CONTROL COSTS*	22.3^b	16.5^b		—	—	—	5.8

— Indicates zero

* Includes NTP budget and infrastructure costs

a No breakdown for specific budget line items was available

b WHO estimates, data not provided by the NTP

every 3 years) result in frequent changes in local government officials.

Public-private sector collaboration was strengthened in 2002 by the inclusion of DOTS treatment for TB as a reimbursable benefit in a pilot public-private financing scheme under the national insurance plan (PHILHEALTH). Efforts are under way to develop a protocol to ensure adherence to all aspects of the DOTS strategy by both public and private sector providers.

Delays in drug procurement are being addressed through the introduction of a new Contract Distribution System (CDS). This will involve contracting a private company to transport drugs directly to the municipalities from the regions. A national programme review was conducted in 2002 by WHO and other partners, revealing that plans for TB control should continue to focus on maintaining quality and on further expansion of DOTS to the remainder of the country.

A pilot survey to assess the extent of the drug-resistance problem was implemented in 2002 with support from WHO

and JICA, and there are plans in 2003 to extend that survey to other parts of the country.

Partnerships

Overall external technical collaboration is led by WHO. Other external technical support from JICA, USAID, World Vision (Canada), Medicos del Mundos (Spain), KNCV, and CDC/DTBE has helped to maintain technical quality during the expansion phase. The Philippines Coalition Against TB (PHILCAT), an NGO and private sector group of 30 entities, has helped to reach consensus on TB control especially in the private sector. It has also helped to mobilize local resources. The main funding partners are the World Bank, CIDA, JICA, and USAID.

Financing

The figures shown in the table are based on estimates provided to WHO in 2001. In these projections, the total NTP budget for 2003 was US\$ 9.1 million, with a funding gap of US\$ 5.8 million. The funding shortage is especially severe for urgently needed new micro-

scopes, for diagnostic supplies, and for a social mobilization campaign to increase case detection. Achievement of the case detection target will require greater effort on the part of the NTP in 2003 to increase government spending for TB and/or to identify new donors. An application has already been submitted to the GFATM. Since 2001, a grant from USAID of US\$ 10 million over 5 years has been awarded to engage the private sector more fully in DOTS. Approximately one third of this money will be spent by the NTP. It is not clear from available data whether this is included in the US\$ 3.3 million to be contributed by the government, or in addition to it.

The cost of shared staff and facilities needed for TB control has been estimated as US\$ 13.2 million in 2003. Country data on the availability and use of facilities are not available. Under the assumption that sufficient capacity is available (i.e. the estimated costs are fully funded), the government contribution to TB control would be 74% of the total cost.

The Russian Federation

Overview of TB control system

Deterioration of the TB situation in Russia became apparent in 1992 when social and economic conditions worsened dramatically, and poverty and homelessness increased. TB incidence more than doubled between 1990 and 2001. The situation is especially bad in correctional institutions, where case rates are around 30 times higher than in the civilian sector. Immigration from other parts of the former Soviet Union with high TB burdens has exacerbated the problem.

The Russian Federation has a network of widely-distributed primary health facilities. However, access to these facilities is difficult in some rural areas because of the vast distances that must be travelled as, for example, in Siberia. Russia does not have a formally established NTP, and TB control is provided by a network of specialized TB dispensaries and hospitals that are not fully integrated into the general health system. TB patients are also treated in penitentiaries run by the Ministry of Justice. The Ministry of Health is currently working on a reorganization to link the TB system with the primary health care network. The role of the central unit is carried out by the Research Institute of Phthisiopulmonology (RIPP) in Moscow. The Director of the RIPP has been nominated as Chief Phthisiologist of the Ministry of Health (equivalent to the NTP manager). A second research facility in Moscow, the Central Tuberculosis Research Institute, is a WHO collaborating centre for DOTS implementation and expansion. Political commitment to TB control is demonstrated by legislation passed in 2001 aimed at strengthening administrative and organizational mechanisms.

Despite considerable progress in implementing DOTS, and growing political commitment, Russia's TB control

system is hampered by the fact that there is no true public health approach in Russia, and the WHO DOTS strategy for TB control is not uniformly supported by Russian authorities. DOTS implementation continues to be affected by weak coordination among government departments.

Case detection and treatment

DOTS population coverage in Russia continues to increase slowly. It was 15% by the end of 2001, but had risen to 27% by the end of 2002. Twenty-six territories are now implementing the WHO recommendations on TB control in both civilian and prison populations under the umbrella of the WHO Moscow Office.

Although the Russian surveillance system probably finds the majority of TB cases, detection rates as defined by WHO remain low (31% nationally, 5% under DOTS) because many cases are not bacteriologically confirmed, and smear microscopy is not yet routinely used for diagnosis. The proportion of cases classified as smear-positive was only 31% in DOTS areas, and 21% in non-DOTS areas, compared to an expected 60-80%. Because of the heavy reliance on X-rays for diagnosis, some notified cases probably do not have TB.

Treatment success in DOTS areas of Russia is only 68%. The high rates of death (6%, often due to late diagnosis), failure (13%, often linked to drug-resistance), and default (9%, especially

PROGRESS IN TB CONTROL IN THE RUSSIAN FEDERATION

Indicators

• Treatment success 2000 cohort	68%
• DOTS detection rate 2001	5%
• Proportion national budget available	not estimated
• Government contribution to available funding, including loans	not estimated
• Government contribution to total TB control costs, including loans	not estimated
• Proportion government health expenditures used for TB	not estimated

Constraints to achieving targets

- Lack of consensus that DOTS is the most appropriate strategy for TB control, coupled with policies on diagnosis and treatment that pre-date DOTS
- Inadequate integration of TB control into general and primary health care
- Limited financial resources for supervision and monitoring, and for development of the laboratory network, together with inadequate mechanisms for allocation of TB funds
- MDR-TB resulting from mixed and ineffective drug therapies, and the previous absence of a national policy on drug management

Remedial actions needed

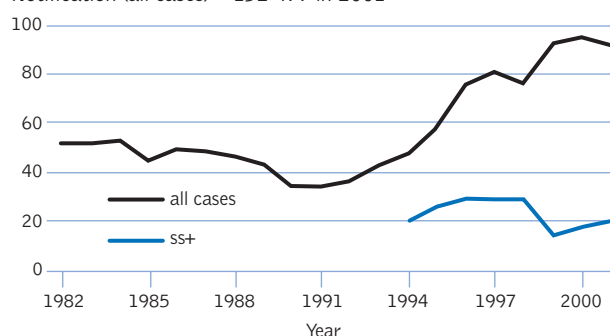
- Persistent advocacy to overcome resistance to the WHO-recommended control strategy and to develop an integrated public health approach
- Technical support for training and education about DOTS
- Resource mobilization to cover the costs of fully upgrading Russia's TB control services, and improved resource allocation mechanisms
- Universal implementation of the newly developed drug policy to improve cure rates and combat MDR-TB

RUSSIAN FEDERATION

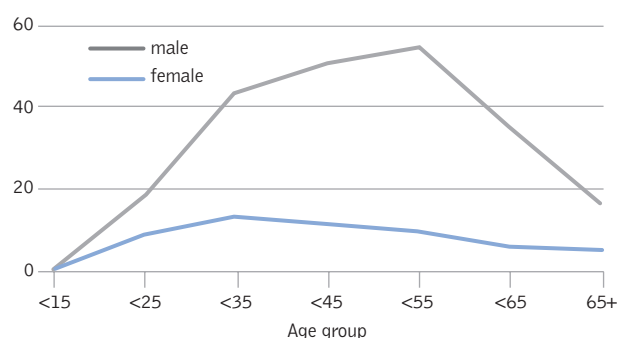
Population	144 664 291	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	9	DOTS population coverage (%)	5	5	12	16
Est. incidence (all cases/100 000 pop) ¹	134	Notification rate (all cases/100 000 pop)	76	92	95	92
Est. incidence (new ss+/100 000 pop) ¹	60	Notification rate (new ss+ cases/100 000 pop)	29	15	18	18
Est. % of adult (15–49y) TB cases HIV+ ¹	1	Case detection rate (new ss+, %)	57	28	32	31
Est. % of new cases multidrug resistant ²	6	DOTS detection rate (new ss+, %)	1	2	3	5
DOTS subnat'l reps (rec'd/expected)	Unknown	DOTS treatment success rate (new ss+, %)	68	65	68	—

Notification rate (per 100 000 pop)

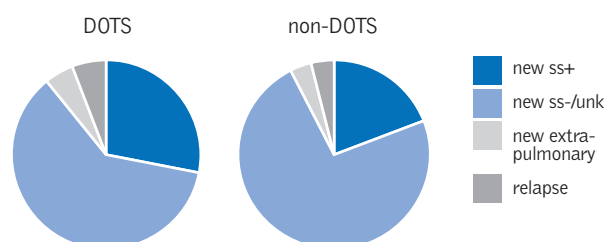
Notification (all cases) = 132 477 in 2001



Notification rate by age and sex (new ss+)³



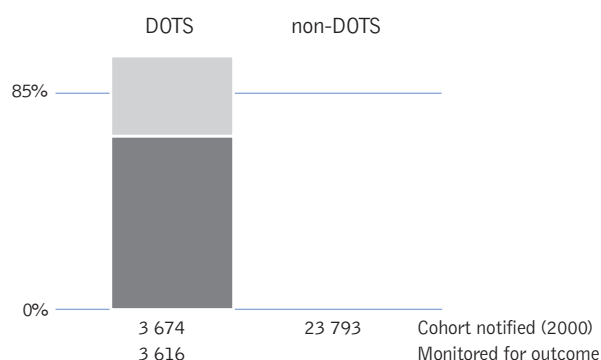
Case types notified



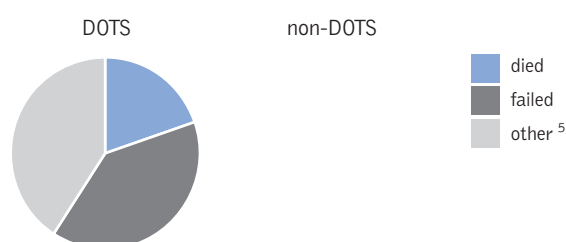
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

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3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

among the homeless and alcoholics) remain significant barriers to successful treatment.

Implementation of national plan for TB control

Russia's new 5-year plan for TB control is more oriented to the DOTS approach and will be funded from the federal health budget, from a recently-approved World Bank loan, and from other external donors. A High Level Working Group on Tuberculosis in Russia (HLWG, comprising representatives from the Russian Ministry of Health, the Ministry of Justice, the Russian Academy of Medical Sciences, the Council of Europe, and WHO) is responsible for the development of TB control policy and strategy. The HLWG assisted with the development of the 5-year country plan that was approved in 2002. It also met in 2002 to develop regulatory documents and to advocate for evidence-based approaches to decisions affecting policy. A national drug management policy was also implemented by the HLWG, and this should lead to increased use of standard drug regimens, and to a reduction in drug resistance that continues to impede efforts to reach the target for treatment success.

The HLWG has filled the role of an NICC by coordinating the work of international partners involved in TB control. An International Interagency Coordination Committee, formed in 2002 under the umbrella of the HLWG, will now oversee the work of the growing number of international donors and technical collaborators.

The important challenge of ensuring

programme sustainability is being addressed through development of the Regional TB Control Programme 2002–2004. Each of the regions will have an exit plan describing how TB control will be organized when funding from external donors is no longer available.

Russia does not have the resources to carry out supervision and monitoring at federal and regional levels, and there is no national TB reference laboratory. Similarly, there are insufficient resources to support a countrywide network of TB laboratories and there is a lack of quality control. The development of a laboratory network is planned for 2003, including the production of guidelines and the designation of reference laboratories.

Despite the growing incidence of TB, and the inclusion of Russia in the list of 22 high-burden countries, there continues to be low awareness about TB in the general population. Russia publicly commemorated World TB Day in 2002 in an effort to raise awareness.

Partnerships

Russia has attracted many donors and partners to support TB control over the last 7 years. WHO has assisted Russia in the introduction of DOTS since 1995, and now plays a central coordinating role between agencies, and an important part in raising funds.

The first DOTS pilot projects began in Ivanovo (funds from DFID and USAID) and Tomsk oblasts in 1994/1995 with technical advice from WHO. Since then WHO has supported projects in Orel Oblast, Vladimir Oblast, Chuvashia Republic (through USAID

funding), Velikii-Novgorod Oblast, Moscow (for asylum seekers, with a grant from Finland), Kaliningrad Oblast (with a grant from Sweden), and the Republic of Ingushetia (funds from USAID, DFID, and CIDA). International agencies such as MSF, Merlin, FILHA, NHLA, and IFRC/The Russian Red Cross Society, are all actively working in both the civilian and prison populations. Other major donors and partners include the World Bank, GTZ, PIH, FILHA, LHL, KNCV, Soros Foundation, Gates Foundation, PHRI, KIL TB Consortium, and Gorgas/University of Alabama.

Revision of the USAID grant in September 2001 has allowed WHO and CDC to improve capacity for training and monitoring at federal level, to extend IEC campaigns on DOTS, and to support World Bank activities.

Financing

Detailed financial information for 2003 was not available. The federal budget for TB control has increased substantially over the last 5 years. The budget was approximately US\$ 6 million in 1998, reaching US\$ 51 million in 2002. However, the total national expenditure on TB control includes the cost of control in each of the 89 oblasts and other territories. Details on these amounts are not available, but the total national expenditure was estimated as US\$ 250 million in 1999. It is likely that the budget for 2003 is larger. These high costs reflect the use of an extensive network of specialist TB hospitals and dispensaries with over 100 000 beds reserved for TB patients.

South Africa

Overview of TB control system

TB control is one of the national health priorities in South Africa. The Government of South Africa has determined that diagnosis and treatment for TB should be free, helping to ensure access for poor people. Many organizations provide services for TB patients, including the government, NGOs, employers, and the private health sector.

Case detection and treatment

DOTS coverage did not increase in South Africa during 2001, but the DOTS detection rate did continue to rise slightly, from 70% to 72%. According to these statistics, South Africa reached the global target for case detection in 2000. However, as for all countries with high rates of HIV infection, there is considerable uncertainty about the true burden of TB in South Africa. Furthermore, it is unclear whether the recent rise in smear-positive case notifications (as compared with the stationary caseload of all forms of TB) represents better diagnosis or a real rise in incidence.

Of patients registered for treatment in 2000, 66% were reported as successfully treated, compared to 60% of the previous cohort. This improvement is, in part, due to better follow-up of patients who transfer between treatment centres – 13% of the 2000 cohort transferred and their outcome was not reported, compared to 17% of the 1999 cohort. Continued improvements in recording and reporting are needed to further reduce the number of patients in this category. A high prevalence of HIV in TB patients contributes to the death rate of 7%. The default rate was 12% for the 2000 cohort. Ensuring that patients complete treatment is vital for the welfare of the patients concerned, helps to reduce transmission and prevent the development of drug resistance,

and is essential if South Africa is to approach the treatment success target of 85%.

Implementation of national plan for TB control

A revised national TB control programme incorporating the DOTS strategy was first established in 1996, with the goal of expanding effective and accessible TB services throughout the country by the end of 2001. Although DOTS coverage was only 77% by the end of 2002, South Africa remains committed to its original goal, but under a revised timeline. To this end, a strategic plan for TB control from 2001–2005 was developed and launched by the Minister of Health in 2002, and provin-

cial plans were also developed. By the end of 2002, TB coordinators had been appointed in all provinces, and provinces and districts are now expected to develop budgets for TB control. An NICC does not yet exist.

TB control has been complicated by the lack of political commitment at all levels following decentralization. However, the rapid increase in TB notification rates, coupled with high rates of HIV infection and the emergence of MDR-TB, have led central and provincial governments to identify TB as a priority. Pilot projects on TB, HIV/AIDS, and STI collaboration in core services have been established in several districts, training programmes for joint TB/HIV control activities has been estab-

PROGRESS IN TB CONTROL IN SOUTH AFRICA

Indicators

● Treatment success 2000 cohort	66%
● DOTS detection rate 2001	72%
● Proportion NTP budget available	not estimated
● Government contribution to available NTP funding, including loans	not estimated
● Government contribution to total TB control costs, including loans	not estimated
● Proportion government health expenditures used for TB	not estimated

Constraints to achieving targets

- Lack of sustained commitment at some levels following decentralization
- Insufficient staff in districts
- Unequal access to laboratory services and poor quality data
- Insufficient coordination of TB and HIV/AIDS control activities

Remedial actions needed

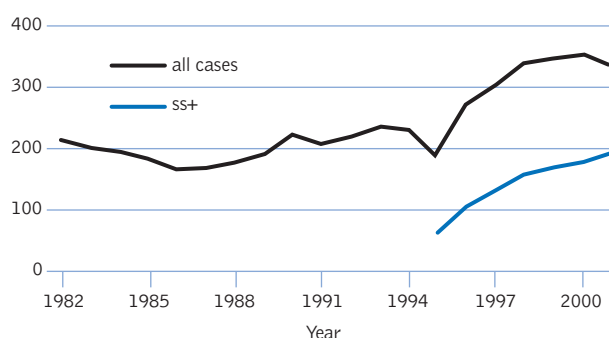
- Increased transparency of budgeting procedures
- Advocacy to ensure sustained political commitment
- Implementation of the provincial plans for TB control to be closely monitored
- Management and supervision to strengthen staff capacity in districts
- Laboratory services to be strengthened through improved contractual arrangements
- Substantially improved coordination between TB and HIV/AIDS control programmes
- Expansion of the Electronic TB Register to improve data quality at district level.

SOUTH AFRICA

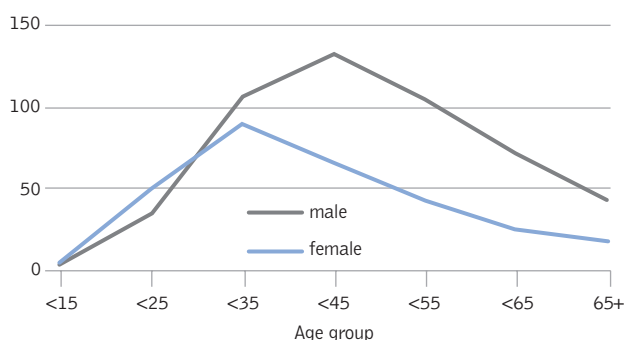
Population	43 791 646	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	7	DOTS population coverage (%)	22	66	77	77
Est. incidence (all cases/100 000 pop) ¹	556	Notification rate (all cases/100 000 pop)	338	347	349	339
Est. incidence (new ss+/100 000 pop) ¹	226	Notification rate (new ss+ cases/100 000 pop)	157	169	175	191
Est. % of adult (15–49y) TB cases HIV+ ¹	60	Case detection rate (new ss+, %)	90	89	85	85
Est. % of new cases multidrug resistant ²	1.5	DOTS detection rate (new ss+, %)	22	67	70	72
DOTS subnat'l reps (rec'd/expected)	525 / 528	DOTS treatment success rate (new ss+, %)	74	60	66	—

Notification rate (per 100 000 pop)

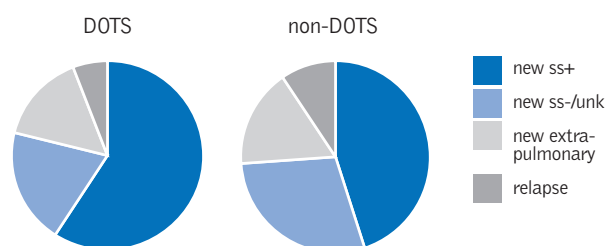
Notification (all cases) = 148 257 in 2001



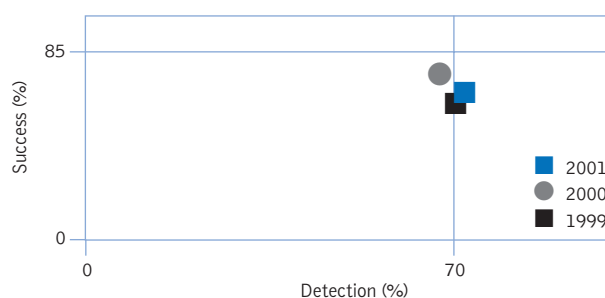
Notification rate by age and sex (new ss+)³



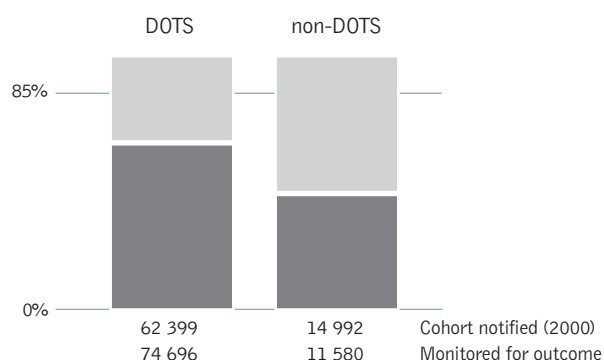
Case types notified



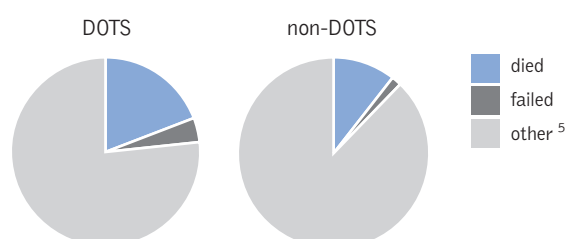
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

lished in each province, an MDR surveillance project was completed, and an in-patient unit was established to treat complex cases. The laboratory network is underdeveloped in South Africa, but this was reviewed in 2002. The Electronic TB Register was introduced during 2002 into 3 more of the 9 provinces to improve the quality of data. Three of the remaining 4 provinces will begin to use the Register in 2003.

Although DOTS now reaches 77% of districts, there are still too few staff based in each district. There are plans in 2003 to provide training in management and supervision to those districts whose performance has been poor. Administrative barriers to the release of funds were a problem that will be addressed by the development of an NGO coalition with a more effective funding mechanism. Efforts in 2003 will focus on expanding DOTS to more districts,

monitoring the quality of DOTS, increasing access to laboratory services, increasing collaboration with NGOs, and expanding joint TB/HIV activities.

Partnerships

National technical partnerships have been established through collaborations with national NGOs (SANTA, TADSA, and Life Care), the university research community, and other government departments. IUATLD and WHO provide overall technical support for TB control, supported by DFID and CDC. DFID is assisting the programme with operational research and with strengthening services at the district level. CDC has helped to implement standard recording and reporting through development of the Electronic TB Register. KNCV helped develop the 2001–2005 national plan for TB control. USAID, DFID, and the Government of Belgium provide finan-

cial support for TB drug resistance surveillance, advocacy, and for collaboration between TB and HIV/AIDS programmes.

Financing

The total budget for TB control is unclear because national data include no information about budgets for provinces and districts. However, almost all of the costs of tuberculosis diagnosis and treatment appear to be funded from government sources, with limited external assistance. Estimates made by WHO in 2002 suggested that these costs amount to around US\$ 230 million per year. This high figure reflects the high patient load, the continued reliance on hospital admission for at least part of the treatment period (especially in rural areas), and relatively high costs for inputs such as staff in this middle-income country.

Thailand

Overview of TB control system

The health infrastructure of Thailand is well developed with a strong network of more than 8 000 health centres offering primary health care services, and more than 900 provincial and district hospitals that provide services including TB treatment. Private practitioners play an important role in urban centres. Challenges for the government health services include the development of comprehensive financing mechanisms and the decentralization of administrative responsibilities as part of ongoing health care reforms.

Case detection and treatment

Thailand is one of the few countries in which case detection under DOTS increased (from 47% to 75%) more quickly than DOTS coverage (from 70% to 82%) between 2000 and 2001. The inclusion of new smear-positive TB cases detected in Bangkok, as well as in prisons, was responsible for about half of the extra 10 000 new smear-positive cases notified for 2001.

Treatment success rate for the 2000 cohort was only 66%, down from 77% in 1999. This is due mostly to the large number of patients for whom outcomes were not reported at national level (12% of the cohort), although the death rate (8%) was also high.

Implementation of national plan for TB control

In response to the threat posed by TB on economic and social development, there is strong political commitment within the MoPH to implement the DOTS strategy. Thailand has developed a comprehensive plan to combat communicable diseases including TB, though a 5-year strategic plan for DOTS expansion is still under development. An NICC is led by the Communicable Disease

Control Department of the MoPH. Rapid and effective DOTS expansion has been possible due to a strengthening of managerial and supervisory capacity at national, provincial, district, and village levels, combined with a comprehensive programme of training and supervision. The generally high level of proficiency among staff in the public health system has further facilitated DOTS expansion, though more staff are needed at primary health care units in provinces. Thailand has made significant progress towards addressing the problem of TB linked to HIV by establishing a central TB/HIV programme. The decentralization of health services is likely to present major challenges to the TB programme in the future.

Full coverage should be reached during 2003 when DOTS services will be integrated into all health facilities. TB control focused on special groups, such as the homeless, will help to improve access to DOTS and increase adherence to treatment. DOTS expansion in large urban areas remains a priority. A newly developed Urban TB Control Project in Bangkok will promote collaboration with private hospitals and private practitioners by, for example, providing drugs in exchange for agreement to comply with NTP recording and reporting standards. Plans to increase case detection in 2003 also include outreach to correctional and chronic care facilities, a programme to reach the mobile cross-border population, and expanded contact investigation.

PROGRESS IN TB CONTROL IN THAILAND

Indicators

• Treatment success 2000 cohort	67%
• DOTS detection rate 2001	60%
• Proportion NTP budget available	75%
• Government contribution to available NTP funding, including loans	62%
• Government contribution to total TB control costs, including loans	70%
• Proportion government health expenditures used for TB*	0.7%

Major constraints to achieving targets

- Possible funding gap of US\$ 3.5 million in 2003
- Loss of central budgetary control through devolution has made national planning more difficult
- Uncertain provincial commitment to financing, reporting, and to meeting WHO targets
- Proposed single, simplified reporting system for all diseases threatens monitoring of TB treatment outcomes

Remedial actions needed

- Budgetary estimates made by provinces must ensure adequate funding for TB control
- Advocacy in the provinces needed to maintain a high profile for TB control
- Provinces to ensure completeness of reporting, and show commitment to reaching WHO targets
- Central TB division must monitor and evaluate the accuracy of provincial reporting, and be given authority to do so

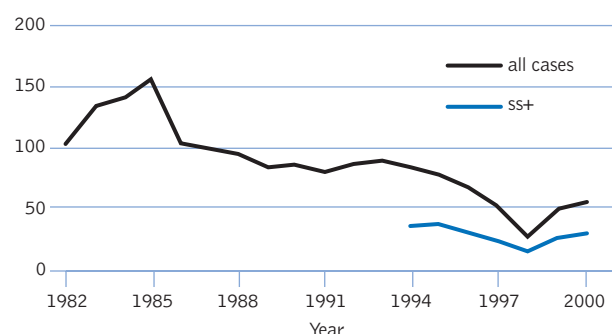
* See footnote 16, page 14.

THAILAND

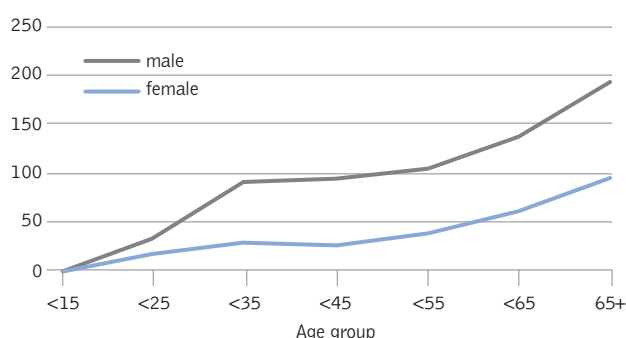
Population	63 583 886	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	16	DOTS population coverage (%)	32	59	70	82
Est. incidence (all cases/100 000 pop) ¹	135	Notification rate (all cases/100 000 pop)	26	47	54	78
Est. incidence (new ss+/100 000 pop) ¹	59	Notification rate (new ss+ cases/100 000 pop)	13	24	28	45
Est. % of adult (15–49y) TB cases HIV+ ¹	12	Case detection rate (new ss+, %)	21	39	47	75
Est. % of new cases multidrug resistant ²	2.1	DOTS detection rate (new ss+, %)	21	39	47	75
DOTS subnat'l reps (rec'd/expected)	Unknown	DOTS treatment success rate (new ss+, %)	68	77	69	—

Notification rate (per 100 000 pop)

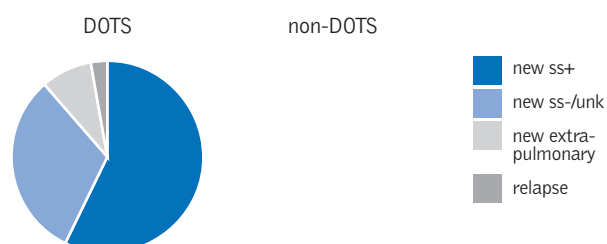
Notification (all cases) = 0 in 2001



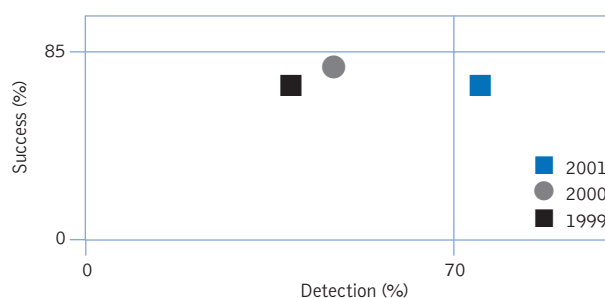
Notification rate by age and sex (new ss+)³



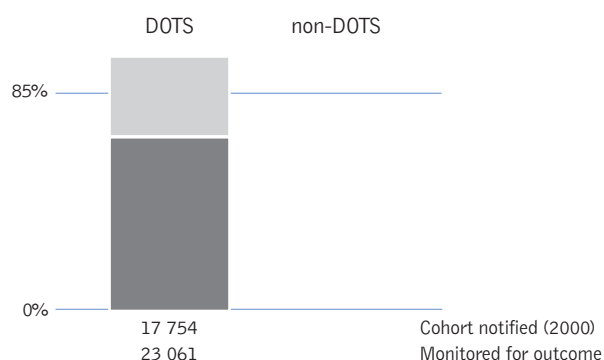
Case types notified



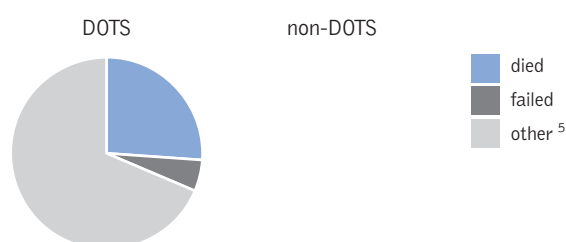
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

THAILAND

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTP budget							
Drugs	6.0	1.5	4.5	—	—	—	—
Diagnostic supplies	0.2	0.1	0.1	—	—	—	—
Basic NTP activities	7.8	0.3	—	—	4.0	—	3.5
Treatment observation	—	—	—	—	—	—	—
Activities to increase case detection	0.1	0.1	—	—	—	—	—
Equipment / vehicles	—	—	—	—	—	—	—
Dedicated facilities	—	—	—	—	—	—	—
Dedicated staff	—	—	—	—	—	—	—
Total NTP budget	14.1	2.0	4.6	—	4.0	—	3.5
Infrastructure costs							
Shared staff / Shared facilities	11.0^a	11.0^a		—	—	—	—
TOTAL TB CONTROL COSTS *	25.1^a	17.6^a		—	4.0	—	3.5

— Indicates zero

* Includes NTP budget and infrastructure costs

^a WHO estimates, data not provided by the NTP

Partnerships

Thailand is collaborating with IUATLD for training and with WHO for operational research.

Financing

The total NTP budget for 2003 is estimated to be US\$ 14.1 million, with a possible funding gap of US\$ 3.5 million. Thailand faces a major change in its health care finance system in 2003 through the introduction of decentralized budgeting at the provincial level. Since the coming year is the first in which the new system will be intro-

duced, it is impossible to assess provincial contributions. The potential funding gap of US\$ 3.5 million described in the table therefore represents a worst case scenario, assuming that provinces will not allocate funding for TB beyond the amounts required for drugs and diagnostic supplies. In addition to the budget shown in the table, the NTP expects to receive US\$ 4 million in 2003 through a grant from the GFATM. However, these funds will mostly be used for additional activities such as TB control in border areas, to enhance collaboration with the private sector in cities, and

to improve the management of TB/HIV, which had previously not been included in the regular NTP budget.

The cost of shared staff and facilities needed for TB control has been estimated as US\$ 25.1 million in 2003. Country data on the availability and use of facilities are not available. Under the assumption that sufficient capacity is available (i.e. the estimated costs are fully funded), the government contribution to TB control would be 70% of the total cost.

Uganda

Overview of TB control system

A strong central TB team has enabled the provision of technical support, supervision, managerial guidance, quality assurance, and advice to districts on the development of health policy. TB control is well integrated into the overall health care system. The main advance in Ugandan TB control is the development of community-based DOTS, where the responsibility for direct observation of treatment is given to members of the public, usually neighbours of patients, assigned by parish committees and local councils.

Case detection and treatment

In 2001, Uganda detected just over half the estimated new smear-positive cases, despite claiming 100% DOTS coverage. To improve access to care, and to provide a higher chance of successful treatment, the community-based approach to DOTS will be introduced to all districts.

Only 80% of the cases notified in 2000 were registered for treatment in that year. Poor reporting from one zone of the country explains this shortfall, and means that the quality of treatment in that zone is unknown.

The overall treatment success rate under DOTS for the 2000 cohort was only 63%, due mainly to the very high default rate of 17%. In addition, no smear examinations were done to confirm treatment success in 30% of patients. However, the cohort includes patients from areas that did not use community-based care, as well as patients from areas where community-based care had been introduced only recently. In those districts where community care was in place at the start of 2000 (Kiboga, Rakai, and Apac), treatment success rates were approximately 80%. In these districts, defaulting fell

from about 20% to 1–2%. This was associated with an increase in the recorded death rate, suggesting that many patients who are recorded as having defaulted actually die. It is becoming clear that a community-based approach to DOTS, as implemented in Uganda, results in better treatment outcomes, and in more accurate recording and reporting of those outcomes.

Implementation of national plan for TB control

Flexible management, together with good analysis of reported data, have stimulated various innovations aimed at providing equitable access to public health services, community-based DOTS among them. As part of the overall Health Sector Strategic Plan 2001–2004, Uganda has developed a strategic plan to expand community-based TB care. As a result of this expansion, 23 of

Uganda's 56 districts now have a fully-functioning community-based approach to TB care, 13 more are about to implement the system, and the remaining 20 districts are preparing to implement in either 2003 or 2004. Districts not yet using a community-based approach are providing in-patient DOTS, with patients remaining in a facility for approximately 2 months (as compared to 1–2 weeks of in-patient care in districts with community-based DOTS).

Uganda's extensive experience in providing care and support for TB patients in the community could be used to develop programmes of TB preventive therapy in HIV-infected individuals, and to guide the distribution of antiretroviral drugs. A proposal to do both is being developed by the NTLP in conjunction with the national HIV/AIDS programme, with technical support from WHO and IUATLD. A number of

PROGRESS IN TB CONTROL IN UGANDA

Indicators

• Treatment success 2000 cohort	63%
• DOTS detection rate 2001	52%
• Proportion NTLP budget available	100%
• Government contribution to available NTLP funding, including loans	29%
• Government contribution to total TB control costs, including loans	78%
• Proportion of government health expenditures used for TB*	6.3%

Constraints to achieving targets

- As a result of government hiring quotas, staffing at central level is limited
- Weak central-level laboratory quality control and insufficient training of staff
- Poor TB control in urban settings
- Increasing prevalence of HIV infection in TB patients

Remedial actions needed

- Secondment of staff from other institutions and from international partners
- Training of laboratory personnel, technical assistance, and supervision from the supranational reference laboratory
- Development of home-based care for TB in towns and cities
- Strengthened collaboration between the NTLP and the national AIDS programme

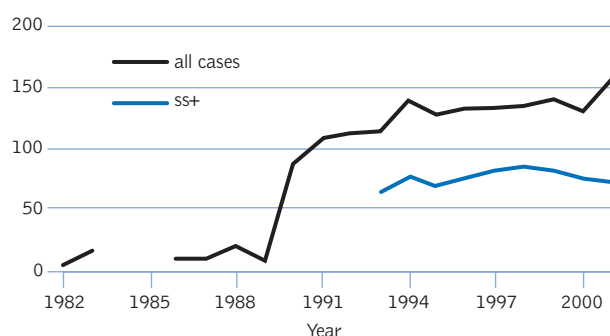
* See footnote 16, page 14.

UGANDA

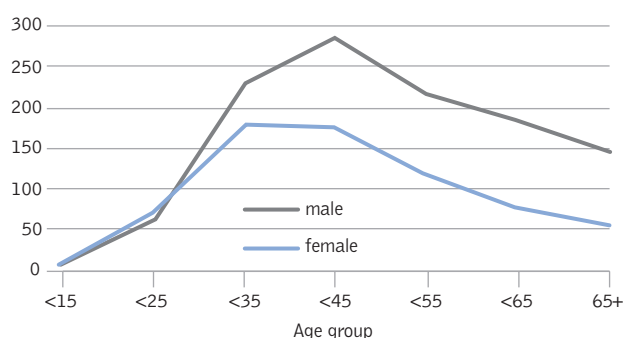
Population	24 022 504	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	20	DOTS population coverage (%)	100	100	100	100
Est. incidence (all cases/100 000 pop) ¹	324	Notification rate (all cases/100 000 pop)	133	140	130	153
Est. incidence (new ss+/100 000 pop) ¹	138	Notification rate (new ss+ cases/100 000 pop)	83	82	74	72
Est. % of adult (15–49y) TB cases HIV+ ¹	35	Case detection rate (new ss+, %)	61	60	54	52
Est. % of new cases multidrug resistant ²	0.5	DOTS detection rate (new ss+, %)	61	59	54	52
DOTS subnat'l reps (rec'd/expected)	196 / 224	DOTS treatment success rate (new ss+, %)	62	61	63	—

Notification rate (per 100 000 pop)

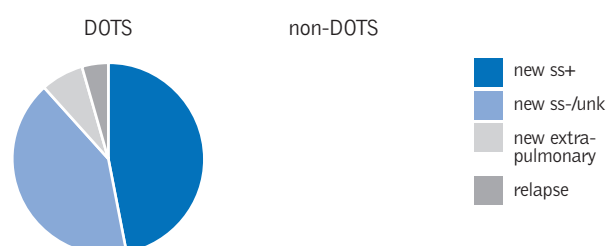
Notification (all cases) = 36 829 in 2001



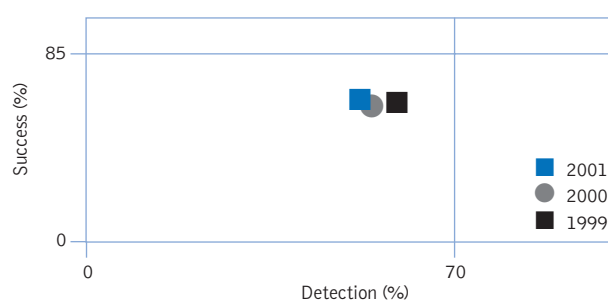
Notification rate by age and sex (new ss+)³



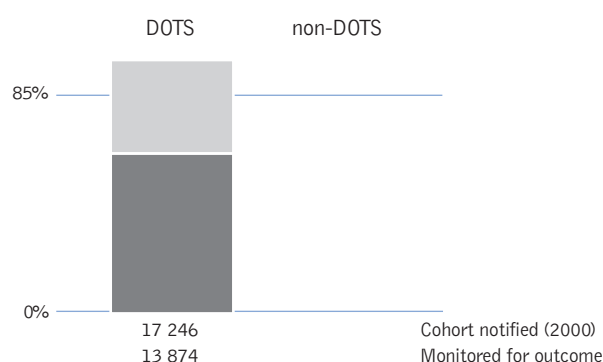
Case types notified



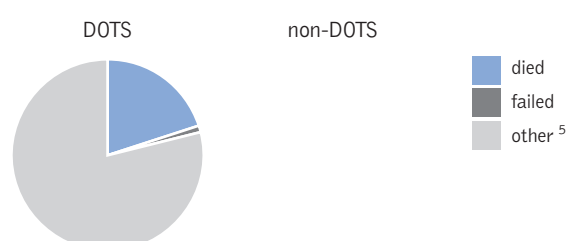
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

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3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

UGANDA

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTLP budget							
Drugs	1.2	—	—	—	0.6	0.6	—
Diagnostic supplies	0.3	—	—	—	0.3	—	—
Basic NTLP activities	0.5	—	—	—	0.5	—	—
Treatment observation	—	—	—	—	—	—	—
Activities to increase case detection	0.01	—	—	—	0.01	—	—
Equipment / vehicles	0.3	—	—	—	0.3	—	—
Dedicated facilities	0.1	0.1	—	—	—	—	—
Dedicated staff	—	—	—	—	—	—	—
Total NTLP budget	2.4	0.1	—	—	1.7	0.6	—
Infrastructure costs							
Shared staff / Shared facilities	5.5^a	5.5^a	—	—	—	—	—
TOTAL TB CONTROL COSTS*	7.9^a	5.6^a	—	—	1.7	0.6	—

— Indicates zero; ne indicates not provided and/or not estimated

* Includes NTLP budget and infrastructure costs

^a WHO estimates, data not provided by the NTLP

NGOs have valuable experience in the care of people living with HIV/AIDS, though coordination is needed among them to avoid duplication of efforts. An NICC is currently being assembled, but has not yet been formally established.

TB supervisors are present in 8 out of 9 NTLP regions, but there remains a need for better understanding of the roles of the central and local governments as this has an impact on resource allocation. The health planning unit of the MoH is giving support to planners at the district level to make their plans consistent with the Health Sector Strategic Plan, and this should help to clarify roles and responsibilities.

Monitoring and supervision have been improved through the appointment of a new regional supervisor, and secondments of staff will be sought from international organizations. A severe countrywide shortage of laboratory staff and equipment has been improved by training microscopists, and by purchasing new diagnostic equipment to keep pace with expanding demand.

Plans for increasing case detection and cure rates in 2003 include the establishment of home-based care in towns and cities, and the integration of TB/HIV care and prevention in 2 major hospitals and 20 districts.

Partnerships

Partnerships are a key component of Uganda's success in combining international collaboration with community involvement for DOTS delivery. Overall external technical support for the country is provided by IUATLD and WHO, with further technical assistance provided by GLRA, LMI, and the Italian Cooperation. External financial support is provided by WHO, GLRA, and the Italian Cooperation for programme operating costs and technical assistance, and by DFID and the GDF for drugs. Through IUATLD, CIDA has provided funds for operations since the beginning of October 2002. The Government of Italy provides support for a WHO staff member to serve as country advisor. CDC GAP supports resource TB staff and activities.

Financing

The Uganda NTLP anticipates no funding gap for the coming year. Funding for drugs is provided through GDF and a World Bank loan, while regular programme activities are supported by a number of bilateral donors. Uganda did not apply for GFATM funding for the fiscal year 2003. The government contribution to the total costs of TB control is mainly through the provision of infrastructure in the general health services.

The cost of the general health services staff and facilities needed for delivery of TB control has been estimated by WHO as approximately US\$ 5.5 million in 2003, with no funding gap (i.e. it is assumed that health services capacity is sufficient to treat the number of patients that it is expected will be detected in 2003). There are neither local estimates of these costs, nor of the extent to which these costs will be covered in 2003.

United Republic of Tanzania

Overview of TB control system

The health care delivery system is well developed and emphasizes self-reliance, and equal access to social services. As a result, there has been a steady expansion of health services to the rural areas so as to serve the majority of the population. The government of Tanzania, through the MoH and the Prime Minister's Office (regional administration and local government), provides most health services (approximately 60%). NGOs, other voluntary agencies, and private-for-profit organizations also play an important part in health care.

TB and leprosy control services (carried out by the NTLP) are accessible to the majority of people through the primary health care system. The former policy of the government to provide free health care for all is no longer deemed to be sustainable. Reforms aim to maintain and increase the effectiveness of the health sector through alternative financing mechanisms (cost-sharing and community health funds), reorganization of the structure of health services (integration of vertical programmes), capacity-building at all levels (including training), and by encouraging participation of the private sector.

Case detection and treatment

A more detailed study of TB epidemiology now under way in Tanzania aims to provide a better estimate of TB incidence, and hence of the case detection rate under DOTS (currently 47%). The study may also help explain why there was no increase in case notifications from 1998 to 2000, but a noticeable rise from 2000 to 2001.

The treatment success rate for the 2000 cohort was 78%. This is well below the 85% target, due partly to the number of patients recorded as having

died (10%, probably linked to HIV in many cases) or defaulted (6%), or for whom outcomes were not reported after transfer between treatment units (5%).

Implementation of national plan for TB control

Health sector reforms require modification in the structure and functions of programmes including the NTLP. Tanzania has had 100% DOTS coverage for many years, and a strategic plan exists for 2001–2004 with the goal of reaching targets for case detection (70%) and treatment success (85%) by 2004. An NICC has been established to aid the process.

In the past, patients have been charged for sputum examination, but this impediment has now been removed through the introduction of a fee waiver in public health facilities. There are plans to waive fees in private health facilities by 2005. Overall health infrastructure will be enhanced in 2003 with the opening of 144 new diagnostic centres aimed at improving patient recruitment.

The continuing decentralization of TB services means that local capacity and infrastructure for DOTS implementation need to be strengthened. To this end Tanzania has trained around 300 district health care workers, introduced the Electronic TB Register (devised by CDC USA) to improve recording and report-

PROGRESS IN TB CONTROL IN TANZANIA

Indicators

• Treatment success 2000 cohort	78%
• DOTS detection rate 2001	47%
• Proportion NTLP budget available	not estimated
• Government contribution to available NTLP funding, including loans	not estimated
• Government contribution to total TB control costs, including loans	not estimated
• Proportion government health expenditures used for TB*	not estimated

Constraints to achieving targets

- Shortage of staff at national level, coupled with high turnover of district coordinators
- Lack of diagnostic centres and shortage of qualified laboratory personnel at district level
- Non-adherence to DOTS strategy by some private hospitals
- User fees in private facilities impede access to care

Remedial actions needed

- Improved advocacy to put NTLP higher on the political agenda for resource allocation
- Increased salaries and other incentives to improve staff recruitment and retention at district and national levels
- Diagnostic services to be strengthened in 2003 at new testing centres with well-trained staff
- Collaboration and training workshops in private hospitals to improve adherence to DOTS
- Elimination of user-fees for private sector patients to ensure better access to care, and hence improved case detection rates

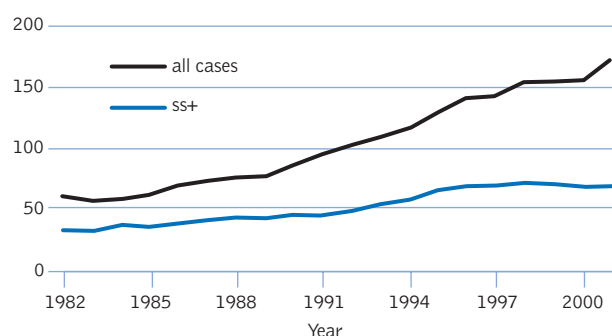
* See footnote 16, page 14.

UNITED REPUBLIC OF TANZANIA

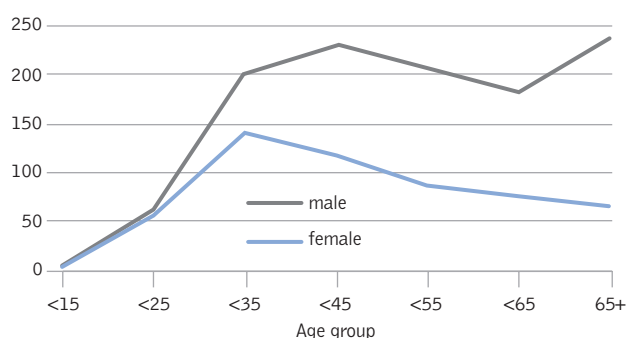
Population	35 965 067	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	14	DOTS population coverage (%)	100	100	100	100
Est. incidence (all cases/100 000 pop) ¹	344	Notification rate (all cases/100 000 pop)	153	153	155	171
Est. incidence (new ss+/100 000 pop) ¹	146	Notification rate (new ss+ cases/100 000 pop)	71	70	68	69
Est. % of adult (15–49y) TB cases HIV+ ¹	35	Case detection rate (new ss+, %)	53	51	48	47
Est. % of new cases multidrug resistant ²	1.2	DOTS detection rate (new ss+, %)	53	51	48	47
DOTS subnat'l reps (rec'd/expected)	146 / 146	DOTS treatment success rate (new ss+, %)	76	78	78	—

Notification rate (per 100 000 pop)

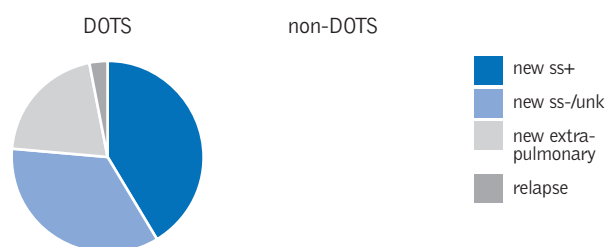
Notification (all cases) = 61 603 in 2001



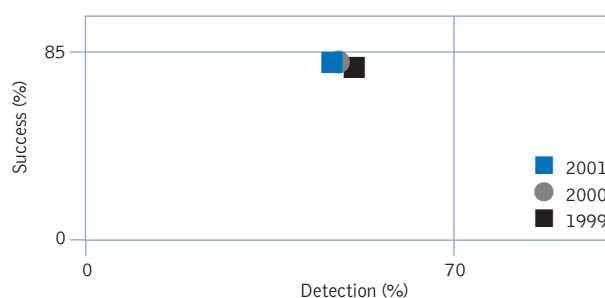
Notification rate by age and sex (new ss+)³



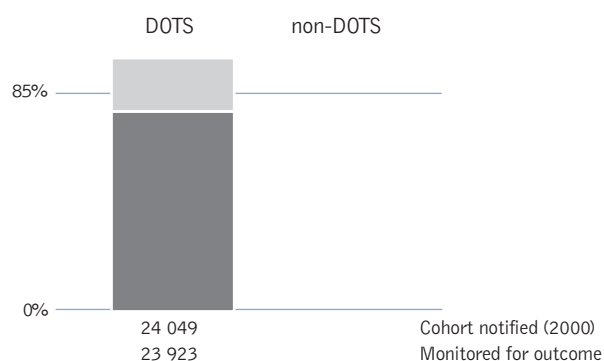
Case types notified



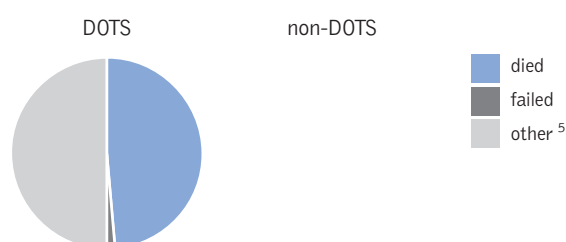
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

ing in 12 districts, and there are plans in 2003 to train 500 more clinicians for TB control at district level. In 2002, the NTLP developed simplified TB control manuals for general health workers and for district health planning, and the DOTS strategy was incorporated into the pre-service curriculum for clinical officers including those working in districts. Funding for TB control was made more direct through the transfer of funds to the NTLP from an MoH basket fund, which will help to cover the costs of TB control in districts.

Although there is not yet a comprehensive IEC strategy, community education about TB was improved through

participation in events surrounding World TB Day, and through the implementation of community TB projects in 2 districts.

A draft protocol was developed for MDR-TB surveillance according to WHO/IUATLD guidelines, and this is now ready for implementation in 2003. The HIV/AIDS epidemic continues to stretch the capacity of Tanzania's health system, so a proposal was prepared for submission to the GFATM to address this threat to achieving targets.

Partnerships

Partnerships with the IUATLD, GLRA, WHO, and KNCV, coordinated overall by

KNCV, have helped to maintain a strong programme for more than 20 years. Principal financial supporters are the governments of the Netherlands, Switzerland, Germany, and Ireland.

Financing

Detailed financial information for 2003 was not available. According to the three-year plan covering the period July 2001 to June 2004, the NTP budget requirement for the fiscal year 2003 would be US\$ 4.5 million. Funding is mainly provided through a donor consortium. Government contributions amount to less than 5% of the required budget.

Viet Nam

Overview of TB control system

Viet Nam has a well-developed health infrastructure formed by over 10 000 commune health centres, each serving some 8 000 people. There are approximately 850 government hospitals employing 27 000 doctors and 46 000 assistant doctors. In recent years, the private sector has been developing quickly in the urban centres. High political commitment has been translated into the allocation of government resources for TB control, backed by a World Bank loan to finance the purchase of drugs.

Case detection and treatment

For the 5th year running, Viet Nam has met both of the global targets for TB control, with 84% of estimated cases detected in 2001, and a treatment success rate of 92% for patients registered for treatment in 2000. Measures described below to improve the penetration of DOTS into remote areas and other groups with poor access to DOTS services are likely to increase the case detection rate still further.

Given the sustained high performance of TB control in Viet Nam, we expect incidence to be falling. The number of cases notified per capita has been steady over the last 4 years, perhaps because the NTP has found and treated a growing fraction of a declining total number of cases. However, the impact of DOTS on incidence, prevalence, and deaths in Viet Nam remains to be demonstrated.

Implementation of national plan for TB control

Viet Nam has both a strategic plan for TB control and an NICC. One challenge for the government is to expand health services, and therefore case detection, to remote areas mainly inhabited by

minority groups comprising some 10% of the total population. To this end, advocacy efforts directed at the National Assembly's Commission for Social Affairs have helped to bring effective TB control to those living in some mountainous and remote areas, to prisoners, and to homeless people, via community-managed health development projects in 51 of 71 districts. TB education was provided to ethnic minority groups. Health care workers at all levels, but especially those in private settings, received training for TB in an attempt to ensure consistent delivery of DOTS. Staff supervision of TB activities was increased in an attempt to ameliorate the high turnover of TB staff at district and commune levels. Diagnostic and treatment services for TB were strengthened

through the provision of sufficient and regular supplies of diagnostic materials and drugs. A challenge, and an opportunity, for the future will be to maintain and develop high-quality TB control services within the context of health sector reform, taking advantage of Viet Nam's sophisticated social organization and a highly effective TB programme. Other challenges are to modernize and rehabilitate the health infrastructure in the remaining 20 districts, regulate the fast-developing private sector, control the influx of non-standard TB drugs, and address the threats of HIV/AIDS and MDR-TB.

Partnerships

Viet Nam has effectively combined international partnerships with national

PROGRESS IN TB CONTROL IN VIET NAM

Indicators

• Treatment success 2000 cohort	92%
• DOTS detection rate 2001	84%
• Proportion NTP budget available	100%
• Government contribution to available NTP funding, including loans	75%
• Government contribution to total TB control costs, including loans	89%
• Proportion government health expenditures used for TB*	3.8%

Challenges

- Too few qualified intermediate-level staff in some provinces
- Poor access to DOTS services in remote, mountainous, and border regions, and among the homeless, prisoners, and illegal residents
- Rapidly developing private sector service provision without adequate training in DOTS
- Unregulated drug market and use of non-standard TB drugs

Remedial actions needed

- Strengthen management capacity through training, operational research, and use of Total Quality Management practices
- Education through primary health care units and community outreach, involving the People's Committee and the Women's Union
- Private sector training and development of regulations to ensure adherence to DOTS
- Legislation on drug inspection to ensure use of WHO-recommended drugs

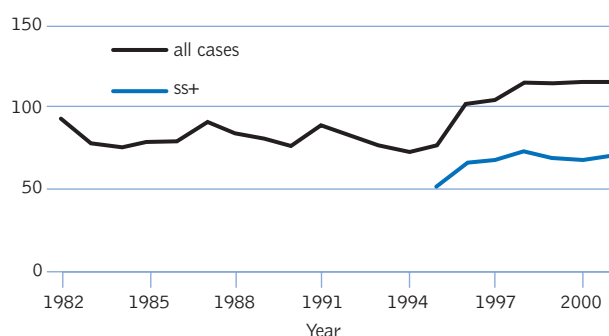
* See footnote 16, page 14.

VIET NAM

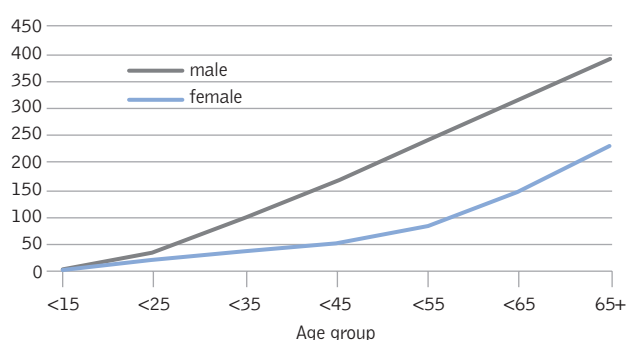
Population	79 174 738	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	13	DOTS population coverage (%)	96	99	100	100
Est. incidence (all cases/100 000 pop) ¹	179	Notification rate (all cases/100 000 pop)	115	115	115	115
Est. incidence (new ss+/100 000 pop) ¹	80	Notification rate (new ss+ cases/100 000 pop)	72	70	68	68
Est. % of adult (15–49y) TB cases HIV+ ¹	1.4	Case detection rate (new ss+, %)	86	84	84	85
Est. % of new cases multidrug resistant ²	2.3	DOTS detection rate (new ss+, %)	83	84	84	85
DOTS subnat'l reps (rec'd/expected)	603 / 615	DOTS treatment success rate (new ss+, %)	93	92	92	—

Notification rate (per 100 000 pop)

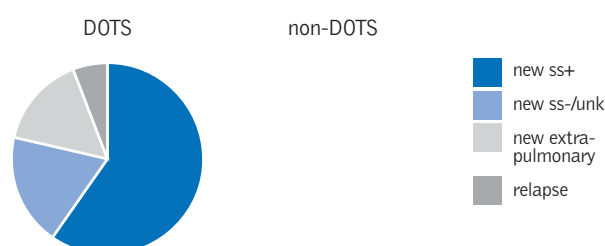
Notification (all cases) = 90 679 in 2001



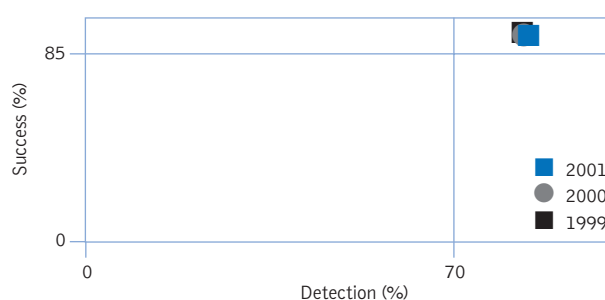
Notification rate by age and sex (new ss+)³



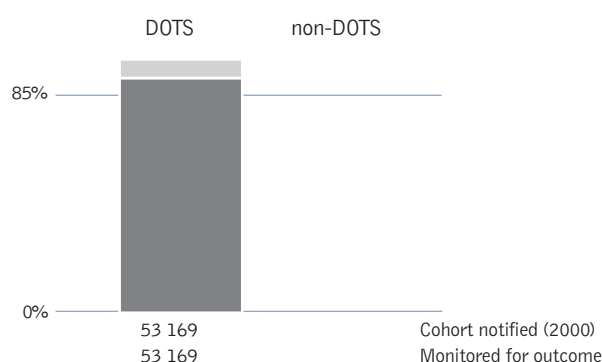
Case types notified



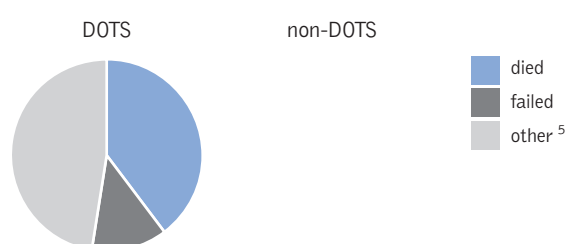
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

1 Est. incidence and Est. % of adult TB cases HIV+ from Corbett EL et al. *Arch Intern Med* (to be published May 2003).

2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

VIET NAM

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTP budget							
Drugs	2.2	—	—	—	—	2.2	—
Diagnostic supplies	0.7	0.1	—	—	0.6	—	—
Basic NTP activities	3.3	0.8	1.2	—	0.8	0.5	—
Treatment observation	1.6	0.2	1.1	—	0.3	—	—
Activities to increase case detection	—	—	—	—	—	—	—
Equipment / vehicles	0.3	—	—	—	0.3	—	—
Dedicated facilities	—	—	—	—	—	—	—
Dedicated staff	—	—	—	—	—	—	—
Total NTP budget	8.1	1.1	2.3	—	2.0	2.7	—
Infrastructure costs							
Shared staff / Shared infrastructure	9.8	9.8		—	—	—	—
TOTAL TB CONTROL COSTS*	17.9	13.2		—	2.0	2.7	—

— Indicates zero

* Includes NTP budget and infrastructure costs

political commitment. Overall external technical collaboration is led by KNCV, WHO, and MCNV. CDC (USA) has a special interest in research and management training. Financial support from the Dutch government and a World Bank loan has helped to establish a model TB control programme. The GFATM has recently approved funding for Viet Nam.

Financing

The NTP will be able to meet all its budget requirements in the coming fiscal year. The Dutch government and the World Bank will continue their support to the NTP, and a small previously existing funding gap will be completely filled through GFATM funding, for which Viet Nam has been approved in 2002. The relatively high percentage of total TB control costs contributed by the government suggests the programme is financially sustainable.

Zimbabwe

Overview of TB control system

Primary health care is seen as a route to achieving affordable universal coverage. Health sector reforms undertaken in the 1990s aimed to improve equity and access to essential health services, including TB care. New reforms will facilitate the process of decentralization, stimulate health financing schemes, regulate the private sector, and strengthen management. At present, TB treatment is still free to patients.

Case detection and treatment

The number of cases notified from Zimbabwe continues to increase, probably in response to the high rates of HIV infection. The case detection rate under DOTS is has changed little since 1998, and is estimated at 47% for 2001. Smear microscopy results are not available for 20% of cases notified, which is not surprising given the poor laboratory facilities. Improving laboratory services will help raise the DOTS detection rate, which is based on smear-positive cases, and make diagnosis and outcome monitoring more accurate.

Only 69% of patients registered in 2000 were successfully treated. The death rate was high (12%), probably due to a combination of frequent HIV co-infection and late diagnosis. Better follow-up of patients who default or transfer to other treatment units (a total of 17% of patients registered in 2000) would help to increase the treatment success rate.

Implementation of national plan for TB control

A draft strategic plan for DOTS expansion now exists but has yet to be approved by the government. An NICC does not yet exist. Decentralization has been accepted in principle, and TB programmes are being run and financed by

the provinces, though this financing is insufficient. An acting TB manager was recruited, and provincial and district TB coordinators are in place, though there is still no national TB programme coordinator and no staff to support the acting NTP manager at the national level. In 2003, technical support to the NTP central unit will increase through the appointment of a WHO national programme officer, and through staff secondment from the Institute of Public Health. Funding for TB/AIDS is now a line item in the national budget for health, which will help to ensure funding in this area, though a separate line item for TB would be preferred.

Formerly, 80% of the rural population lived within 5km of a rural health centre, but access has declined in 2002 as a result of a land reform programme

that has led to new settlements in areas with no clinics. Better public information about TB, in the form of radio and TV programs and IEC materials, is expected to lead to improved case detection in populations living near rural health centres, and there are plans in 2003 to develop health infrastructure in the new settlements.

Every district now has a laboratory. Some laboratories were refurbished in 2002, and equipment including microscopes was repaired or replaced. The refurbishment will continue during 2003, along with training of laboratory staff, and development of a process to ensure a consistent supply of reagents.

A national supervision checklist now exists and quarterly meetings of TB coordinators take place. Quarterly reports for epidemiological surveillance are

PROGRESS IN TB CONTROL IN ZIMBABWE

Indicators

• Treatment success 2000 cohort	69%
• DOTS detection rate 2001	47%
• Proportion NTP budget available	43%
• Government contribution to available NTP funding, including loans	42%
• Government contribution to total TB control costs, including loans	84%
• Proportion government health expenditures used for TB*	9.6%

Major constraints to achieving targets

- Weak political commitment to TB control
- Lack of TB manager and other staff
- Funding gap of \$2.5 million in 2003
- Low access to treatment due to poor infrastructure in new settlements
- Limited involvement of communities in TB control

Remedial actions needed to overcome constraints

- Failing support from the GFATM and GDF, funds will need to be sought elsewhere
- Stronger advocacy for TB control, with the particular aim of establishing more managerial and staff positions in the NTP
- Community-based DOTS to be introduced in new settlements where there is no health infrastructure, and in large cities where there is weak participation in existing TB control activities

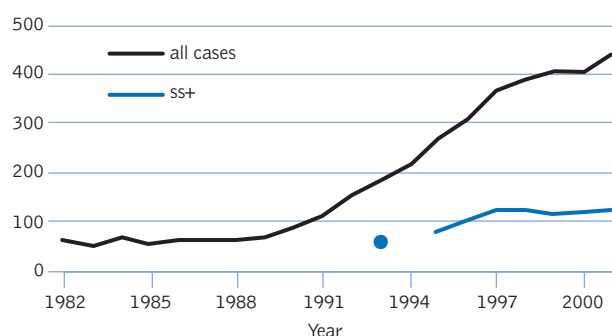
* See footnote 16, page 14.

ZIMBABWE

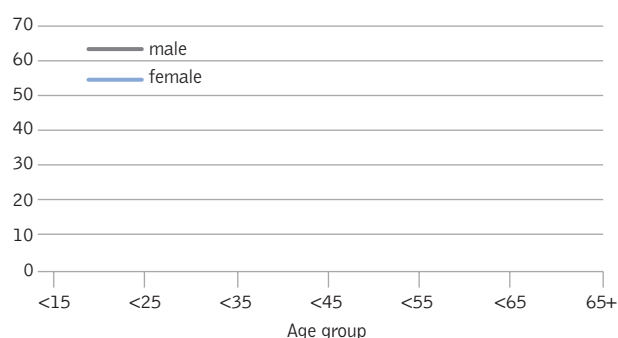
Population	12 851 875	Trends:	1998	1999	2000	2001
Global rank (by est. number of cases)	17	DOTS population coverage (%)	100	12	100	100
Est. incidence (all cases/100 000 pop) ¹	628	Notification rate (all cases/100 000 pop)	387	404	403	437
Est. incidence (new ss+/100 000 pop) ¹	252	Notification rate (new ss+ cases/100 000 pop)	119	116	114	120
Est. % of adult (15–49y) TB cases HIV+ ¹	67	Case detection rate (new ss+, %)	53	50	47	47
Est. % of new cases multidrug resistant ²	1.9	DOTS detection rate (new ss+, %)	53	50	47	47
DOTS subnat'l reps (rec'd/expected)	Unknown	DOTS treatment success rate (new ss+, %)	70	73	69	—

Notification rate (per 100 000 pop)

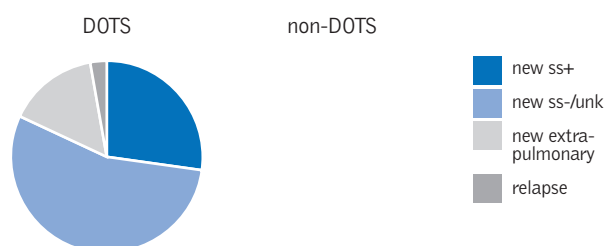
Notification (all cases) = 56 222 in 2001



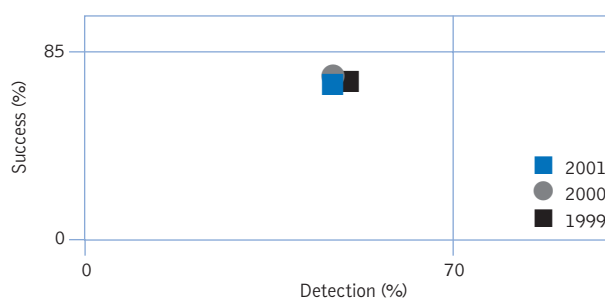
Notification rate by age and sex (new ss+)³



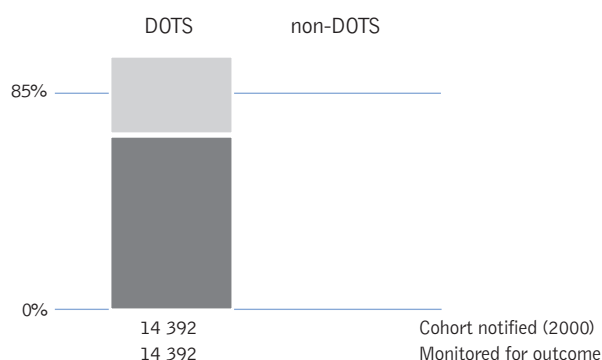
Case types notified



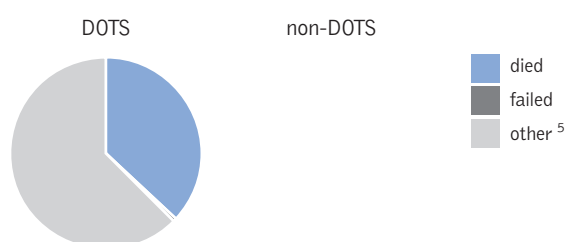
DOTS progress towards targets⁴



Treatment success rate (new ss+)



Unsuccessful treatment outcomes (new ss+)



Notes

Est = estimated; ss+ = smear-positive; ss- = smear-negative; nat'l = national; reps = reports; rec'd = received at nat'l level; — = data not yet collected by WHO; pop = population; unk = unknown.

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2 Est. multidrug resistance from: Dye C et al. *J Infect Dis* 2002;185:1197–1202.

3 The sum of cases notified by age and sex is less than the number of new smear-positive cases notified for some countries.

4 DOTS progress towards targets: DOTS detection rate for given year, DOTS success rate for cohort registered in previous year.

5 Other = default, transfer out and not evaluated, and other unknown.

ZIMBABWE

Budget estimates, existing funding, and budget gaps for 2003, US\$ millions

	FUNDING REQUIRED	EXPECTED RESOURCE AVAILABILITY					FUNDING GAP
		GOVERNMENT (CENTRAL)	GOVERNMENT (PERIPHERAL)	INSURANCE	GRANTS	LOANS	
NTP budget							
Drugs	1.1	—	—	—	1.1	—	—
Diagnostic supplies	0.6	0.4	—	—	—	—	0.2
Basic NTP activities	0.8	0.2	—	—	—	—	0.6
Treatment observation	—	—	—	—	—	—	—
Activities to increase case detection	0.6	0.2	—	—	—	—	0.4
Equipment / vehicles	1.3	—	—	—	—	—	1.3
Dedicated facilities	—	—	—	—	—	—	—
Dedicated staff	—	—	—	—	—	—	—
Total NTP budget	4.4	0.8	—	—	1.1	—	2.5
Infrastructure costs							
Shared staff / Shared facilities	17.6^a	17.6^a	—	—	—	—	—
TOTAL TB CONTROL COSTS*	22.0^a	18.4^a	—	—	1.1	—	2.5

— Indicates zero

* Includes NTP budget and infrastructure costs

^a WHO estimates, data not provided by the NTP

available from all districts and provinces. In 2003, the central unit will further strengthen data management to provide better information for planning at district level.

Although the NTP has a system for tracking drug stocks and funds, drugs are not always available. However, the EU has agreed to provide drugs starting in 2003.

Partnerships

WHO leads external technical support for the country, and IUATLD may contribute in the future. CDC LIFE is planning to support some activities to control TB. WHO provides technical sup-

port, and DANIDA supports laboratories. Through national partnerships, TB and HIV/AIDS care has become more integrated. Because some external partners have withdrawn support, an application to the GFATM was submitted in 2002.

Financing

Despite securing funding for drugs through an EU grant, the NTP faces a considerable funding gap for 2003 following the withdrawal of previous support from the Dutch government. The need is greatest for laboratory equipment and vehicles, in order to improve the quality and availability of smear microscopy, and to ensure adequate

supervision of DOTS everywhere. In late 2002, Zimbabwe applied to the GFATM for an additional US\$ 5.7 million to be spent over 3 years. If this proposal is approved, the expected budget gap of US\$ 2.5 million for 2003 would be filled.

The cost of shared staff and facilities needed for TB control has been estimated as US\$ 17.6 million in 2003. Country data on the availability and use of facilities are not available. Under the assumption that sufficient capacity is available (i.e. the estimated costs are fully funded), the government contribution to TB control would be 84% of the total cost.

ANNEX 4

Country data by region

AFRICA

THE AMERICAS

EASTERN MEDITERRANEAN

EUROPE

SOUTH-EAST ASIA

THE WESTERN PACIFIC

Explanatory notes

Country-specific data grouped by region. For each country we present:

- 2001 notification, detection, and coverage data – for the whole country, and for DOTS and non-DOTS programmes.
- Treatment outcomes for the 2000 cohort – both treatment and retreatment outcomes from DOTS programmes, and treatment outcomes (where available) from non-DOTS programmes.
- New smear-positive notifications (numbers) by age and sex – from DOTS and from non-DOTS programmes.
- New smear-positive notification rates by age and sex for the whole country.
- Notification (all cases) numbers and rates, since 1980.
- Notification (new smear-positive cases) numbers and rates, since 1993.
- Country notes: remarks from respondents that may help to explain data in selected countries' reports.

Notation for 1st table

- a The population (source: United Nations Population Division, World Population Prospects, 2000 revision).
- b The total number of tuberculosis cases notified to WHO.
- b/a The case notification rate (per 100 000 population).
- c The number of new smear-positive cases notified to WHO.
- c/a The new smear-positive case notification rate (per 100 000 population).
- d The number of new laboratory-confirmed cases notified to WHO.
- d/a The new laboratory-confirmed case notification rate (per 100 000 population).
- e The estimated number of new cases (all forms).
- e/a The estimated incidence rate (all forms, per 100 000 population)
- f The estimated number of new sputum smear-positive cases.
- f/a The estimated incidence of smear-positive cases (per 100 000 population)
- b/e The proportion of estimated cases that are notified.
- c/f The case detection rate: the proportion of estimated new smear-positive cases that are notified.
- g The TB control category (classification based on control strategy and estimated incidence of TB. See Table 1 for definitions).
- h The percentage of the population living in geographic areas serviced by health facilities implementing DOTS.
- i Notification (all cases) from DOTS programmes.
- i/a The case notification rate (all cases, per 100 000 population) from DOTS programmes.
- j The number of new smear-positive cases notified by DOTS programmes.
- j/a The new smear-positive case notification rate (per 100 000 population) from DOTS programmes.
- j/f DOTS detection rate: the proportion of estimated new smear-positive cases notified under DOTS.
- k The proportion of all new pulmonary cases that are smear-positive.
- l–n As for i–k, above, but for non-DOTS programmes.

Notation for 2nd table

- a The number of new smear-positive cases registered for treatment under DOTS in 2000.
- b The proportion of registered new smear-positive cases not evaluated.
- c–h The proportion of registered new smear-positive cases with treatment outcomes as defined in Table 5 (cured, completed, died, failed, defaulted or transferred).
- c+d Treatment success (see Table 5).
- i–p See (a–h) of 2nd table, above. Outcomes for DOTS retreatment cases (as defined in Table 3) in 2000.
- q–x See (a–h) of 2nd table, above. Outcomes for new smear-positive cases registered in non-DOTS programmes in 2000.

Africa: Summary of TB control policies

COUNTRY	MICROSCOPY (A)	SCC (B)	DOT (C)	OUTCOME MONITORING (D)	CATEGORY AS OF 31/12/01*	DOTS NEWLY IMPLEMENTED IN 2001
ALGERIA					4	
ANGOLA					0	
BENIN					0	
BOTSWANA					4	
BURKINA FASO					4	
BURUNDI					3	
CAMEROON					0	
CAPE VERDE					3	X
CENTRAL AFRICAN REPUBLIC					3	
CHAD					0	
COMOROS					0	
CONGO					4	
CÔTE D'IVOIRE					3	
DR CONGO					3	
EQUATORIAL GUINEA					0	
ERITREA					3	
ETHIOPIA					3	
GABON					0	
GAMBIA					0	
GHANA					4	
GUINEA					0	
GUINEA-BISSAU					0	
KENYA					4	
LESOTHO					0	
LIBERIA					0	
MADAGASCAR					4	
MALAWI					4	
MALI					0	
MAURITANIA					0	
MAURITIUS					4	
MOZAMBIQUE					4	
NAMIBIA					3	
NIGER					0	
NIGERIA					3	
RWANDA					4	
SAO TOME AND PRINCIPE					1	
SENEGAL					4	
SEYCHELLES					4	
SIERRA LEONE					3	
SOUTH AFRICA					3	
SWAZILAND					1	
TOGO					0	
UGANDA					4	
UR TANZANIA					4	
ZAMBIA					1	
ZIMBABWE					4	

Microscopy (a) Use of smear microscopy for diagnosis
 SCC (b) Short course chemotherapy
 DOT (c) Directly observed therapy
 Outcome monitoring (d) Monitoring of treatment outcomes by cohort analysis
 * See table 1 for definition of categories

	implemented in all units/areas
	implemented in some units/areas
	not implemented
	unknown

Note: responses refer to DOTS units/areas if the country is classified as having implemented DOTS.

Country data for Africa: notification, detection and DOTS coverage, 2001

Country/Territory	Country information													DOTS										non-DOTS				
	Notified TB					Estimated TB					DOTS			Notifications					% of					All cases				
	Pop		New ss+		New confirmed*	All cases		New ss+		Deletion rate	DOTS		%	All cases		New ss+		%	pult		%	pult	%	All cases		New ss+		%
	thousands	rate	number	rate		number	rate	number	rate		category	pop		number	rate	number	rate		cases	rate		cases	rate	number	rate	number	rate	cases
	a	b/a	c	d/a	e	f/a	e/a	f	f/a	b/e	g	h	i/a	j/a	j/a	j/a	j/a	k	l/a	l/a	l/a	l/a	m	n	o	p	q	r
Algeria	30 841	18 250	59	7 953	26	15 541	50	6 993	23	117	4	100	18 250	59	7 953	26	114	83										
Angola	13 527					27 120	200	11 916	88																			
Benin	6 446					5 384	84	2 372	37																			
Botswana	1 554	9 618	619	3 057	197	10 325	664	4 071	262	93	4	100	9 618	619	3 057	197	75	38										
Burkina Faso	11 856	2 406	20	1 522	13	23 363	197	10 025	85	10	4	100	2 406	20	1 522	13	15	25										
Burundi	6 502	6 478	100	3 040	47	18 411	283	7 707	119	35	3	90	6 478	100	3 040	47	39	72										
Cameroon	15 203					22 056	145	9 397	62																			
Cape Verde	437	291	67	140	32	792	181	348	80	37	40	30	291	67	140	32	40	64										
Central African Republic	3 782	2 550	67	1 382	37	12 806	339	5 308	140	20	26	3	30	1 097	29	439	12	8	53									
Chad	8 135					18 391	226	8 089	99																			
Comoros	727					446	61	200	28																			
Congo	3 110	9 735	313	4 319	139	9 675	311	4 149	133	101	4	100	9 735	313	4 319	139	104	65										
Côte d'Ivoire	16 349	16 533	101	10 920	67	54 677	334	22 942	140	30	48	3	21	3 377	21	2 380	15	10	88									
DR Congo	52 522	66 748	127	42 054	80	158 734	302	68 641	131	42	61	3	70	66 748	127	42 054	80	61	84									
Equatorial Guinea	470					909	194	407	87																			
Eritrea	3 816	2 743	72	702	18	10 581	277	4 646	122	26	15	3	40	2 743	72	702	18	15	39									
Ethiopia	64 459	94 957	147	33 028	51	188 097	292	78 972	123	50	42	3	70	94 957	147	33 028	51	42	54									
Gabon	1 262					2 422	192	1 054	84																			
Gambia	1 337					3 747	280	1 657	124																			
Ghana	19 734	11 923	60	7 712	39	39 688	201	17 340	88	30	44	4	100	11 923	60	7 712	39	44	73									
Guinea	8 274					16 629	201	7 381	89																			
Guinea-Bissau	1 227					2 442	199	1 075	88																			
Kenya	31 293	73 017	233	31 307	100	161 085	515	66 737	213	45	47	4	100	73 017	233	31 307	100	47	53									
Lesotho	2 057					13 469	655	5 428	284																			
Liberia	3 108					7 795	251	3 426	110																			
Madagascar	16 437	16 447	100	11 092	67	41 236	251	18 531	113	40	60	4	100	16 447	100	11 092	67	60	86									
Malawi	11 572	26 094	225	8 309	72	49 948	432	20 550	178	52	40	4	100	26 094	225	8 309	72	40	44									
Mali	11 677					37 403	320	16 535	142																			
Mauritania	2 747					5 425	198	2 429	88																			
Mauritius	1 171	123	11	85	7	784	67	349	30	16	24	4	100	123	11	85	7	24	74									
Mozambique	18 644	22 094	119	13 964	75	49 342	285	20 498	110	45	68	4	100	22 094	119	13 964	75	68	75									
Namibia	1 788	11 219	628	4 453	249	11 190	626	4 555	255	100	98	3	60	11 219	628	4 453	249	98	61									
Niger	11 227					20 451	182	9 092	81																			
Nigeria	116 929	45 842	39	23 410	20	274 972	235	118 970	102	17	20	3	55	29 560	25	18 882	16	16	68									
Rwanda	7 949	5 473	69	3 252	41	24 350	306	10 197	128	22	32	4	100	5 473	69	3 252	41	32	81									
Sao Tome and Principe	140	97	69	41	29	185	132	83	59	52	49	1																
Senegal	9 662	8 554	89	6 094	63	16 135	167	7 148	74	53	85	4	100	8 554	89	6 094	63	85	83									
Seychelles	81	19	23	12	15	34	42	16	19	56	75	4	100	19	23	12	15	75	75									
Sierra Leone	4 587	4 673	102	2 692	59	15 778	344	6 924	151	30	39	3	90	4 673	102	2 692	59	39	65									
South Africa	43 792	148 257	339	83 808	191	243 306	556	98 930	226	61	85	3	77	121 026	276	71 571	163	72	75									
Swaziland	938	6 118	653	1 279	136	9 269	989	3 721	397	66	34	1																
Togo	4 657					7 345	158	3 160	68																			
Uganda	24 023	36 829	153	17 291	72	77 853	324	33 050	138	47	52	4	100	36 829	153	17 291	72	52	53									
UR Tanzania	35 965	61 603	171	24 685	69	123 717	344	52 575	146	50	47	4	100	61 603	171	24 685	69	47	54									
Zambia	10 649	46 259	434	13 024	122	69 549	653	28 279	266	67	46	1																
Zimbabwe	12 852	56 222	437	15 370	120	80 733	628	32 427	252	70	47	4	100	56 222	437	15 370	120	47	33									

* these data are not required by WHO, but are provided by some countries, particularly those in the European Region

Country data for Africa, cont'd: treatment outcomes for cases registered in 2000 - DOTS and non-DOTS

[illegible]

Country data for Africa, cont'd: age and sex distribution of smear-positive cases in DOTS areas, 2001 (absolute numbers)

	MALE						FEMALE						ALL								
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+
Algeria	41	1 345	1 614	708	401	283	390	79	1 057	782	352	287	280	334	120	2 402	2 396	1 060	688	563	724
Angola																					
Benin																					
Botswana	15	190	539	490	288	116	73	33	328	493	309	116	46	23	48	518	1 032	799	404	162	96
Burkina Faso	7	124	283	279	168	122	70	17	80	155	100	49	32	32	24	204	438	379	217	154	102
Burundi	34	344	559	469	238	75	39	81	369	364	337	86	30	15	115	713	923	806	324	105	54
Cameroon																					
Cape Verde																					
Central African Republic	1	51	92	56	19	8	2	3	64	82	38	16	7	0	4	115	174	94	35	15	2
Chad																					
Comoros																					
Congo	31	557	756	437	174	85	65	53	554	706	377	177	85	107	84	1 111	1 462	814	351	170	172
Côte d'Ivoire	28	280	388	298	156	117	105	43	270	340	179	98	49	28	71	550	728	477	254	166	133
DR Congo	581	4 651	6 794	4 817	2 876	1 384	724	842	4 922	5 586	3 704	2 057	1 042	470	1 423	9 573	12 380	8 521	4 933	2 426	1 194
Equatorial Guinea																					
Eritrea	5	79	95	77	40	42	21	9	96	76	66	50	31	15	14	175	171	143	90	73	36
Ethiopia	913	5 730	5 594	3 233	1 581	742	354	1 107	5 109	4 830	2 372	1 014	338	111	2 020	10 839	10 424	5 605	2 595	1 080	465
Gabon																					
Gambia																					
Ghana	84	587	1 223	1 144	857	471	460	128	515	814	623	370	209	227	212	1 102	2 037	1 767	1 227	680	687
Guinea																					
Guinea-Bissau																					
Kenya	299	4 083	7 070	3 903	1 771	723	443	464	4 116	4 822	2 063	935	394	221	763	8 199	11 892	5 966	2 706	1 117	664
Lesotho																					
Liberia																					
Madagascar	103	1 033	1 588	1 625	1 094	613	404	190	1 010	1 349	1 094	546	289	154	293	2 043	2 937	2 719	1 640	902	558
Malawi	37	704	1 486	1 025	591	230	129	74	1 070	1 520	862	384	139	58	111	1 774	3 006	1 887	975	369	187
Mali																					
Mauritania																					
Mauritius																					
Mozambique																					
Namibia																					
Niger	21	318	977	718	314	144	109	33	393	720	396	166	86	59	54	711	1 697	1 114	480	230	168
Nigeria																					
Rwanda	164	2 196	3 281	2 076	1 283	654	488	272	2 619	2 510	1 201	715	387	251	436	4 815	5 791	3 277	1 998	1 041	739
Sao Tome and Principe																					
Senegal	77	908	1 331	890	498	258	226	90	540	531	333	204	113	95	167	1 448	1 862	1 223	702	371	321
Seychelles	0	0	2	4	0	2	2	0	0	2	0	1	0	1	0	0	4	4	1	2	3
Sierra Leone	19	268	546	406	230	123	51	36	279	292	234	120	61	27	55	547	838	640	350	184	78
South Africa	99	1 107	2 917	2 899	1 493	562	215	189	1 751	2 518	1 404	658	235	132	288	2 858	5 435	4 303	2 151	797	347
Swaziland	8	90	234	192	119	35	17	11	181	237	98	37	9	8	19	271	471	290	156	44	25
Togo																					
Uganda	231	1 461	3 483	2 540	1 242	638	392	334	1 603	2 656	1 528	703	292	180	565	3 064	6 139	4 068	1 945	930	572
UR Tanzania	212	2 302	4 912	3 545	2 031	1 136	930	312	2 117	3 609	1 847	891	522	319	524	4 419	8 521	5 392	2 922	1 658	1 249
Zambia																					
Zimbabwe																					
Regional total	3 010	28 408	45 764	31 831	17 464	8 563	5 709	4 400	29 043	34 994	19 517	9 680	4 676	2 867	7 410	57 451	80 758	51 348	27 144	13 239	8 576

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for Africa, cont'd: age and sex distribution of smear-positive cases in non-DOTS areas, 2001 (absolute numbers)

	MALE						FEMALE						ALL								
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+
Algeria																					
Angola																					
Benin																					
Botswana																					
Burkina Faso																					
Burundi																					
Cameroon	0	5	15	6	5	5	1	2	7	9	7	1	2	3	2	12	24	13	6	7	4
Cape Verde	14	76	187	115	59	37	14	22	115	154	85	48	16	1	36	191	341	200	107	53	15
Central African Republic																					
Chad																					
Comoros																					
Congo																					
Côte d'Ivoire	80	925	1 430	1 080	530	276	197	84	841	1 005	556	244	190	84	164	1 766	2 435	1 636	774	466	281
DR Congo																					
Equatorial Guinea																					
Eritrea																					
Ethiopia																					
Gabon																					
Gambia																					
Ghana																					
Guinea																					
Guinea-Bissau																					
Kenya																					
Lesotho																					
Liberia																					
Madagascar																					
Malawi																					
Mali																					
Mauritania																					
Mauritius																					
Mozambique																					
Namibia																					
Niger																					
Nigeria																					
Rwanda																					
Sao Tome and Principe	0	7	14	6	6	5	12	1	4	10	4	8	6	14	1	11	24	10	14	11	26
Senegal																					
Seychelles																					
Sierra Leone																					
South Africa	64	383	927	641	345	128	40	86	486	702	344	123	60	36	150	869	1 629	985	468	188	76
Swaziland																					
Togo																					
Uganda																					
UR Tanzania																					
Zambia																					
Zimbabwe																					
Regional total	158	1 396	2 573	1 848	945	451	264	195	1 453	1 880	996	424	274	138	353	2 849	4 453	2 844	1 369	725	402

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for Africa, cont'd: smear-positive notification rates by age and sex, 2001

	MALE							FEMALE							ALL						
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+
Algeria	1	39	62	38	34	47	68	2	32	31	19	26	43	47	1	36	47	29	30	45	56
Angola																					
Benin																					
Botswana	5	107	490	701	751	516	443	10	185	465	423	238	130	79	7	146	477	559	464	280	210
Burkina Faso	0	10	44	69	71	71	45	1	6	20	21	17	14	14	0	8	31	43	41	38	27
Burundi	2	51	156	176	138	90	57	5	54	97	116	41	24	13	4	52	126	144	85	50	29
Cameroon																					
Cape Verde	0	11	44	26	125	143	14	2	15	24	23	9	22	23	1	13	33	25	40	56	20
Central African Republic	2	34	118	103	66	58	25	3	47	95	69	48	25	1	2	41	106	86	57	40	11
Chad																					
Comoros																					
Congo	4	190	381	339	207	153	146	7	183	342	276	189	132	182	6	187	361	306	197	142	167
Côte d'Ivoire	3	67	163	168	116	104	114	4	62	129	105	70	75	45	3	65	147	139	95	90	80
DR Congo	5	93	215	232	210	155	112	7	99	176	174	140	99	54	6	96	195	203	174	125	79
Equatorial Guinea																					
Eritrea	1	22	36	43	34	55	42	1	26	29	36	40	37	24	1	24	32	39	37	45	32
Ethiopia	6	93	132	111	81	59	41	8	83	114	80	49	25	11	7	88	123	95	64	41	24
Gabon																					
Gambia																					
Ghana	2	28	86	121	137	120	155	3	24	57	65	56	49	64	3	26	72	93	96	83	106
Guinea																					
Guinea-Bissau																					
Kenya	4	113	319	288	214	169	106	7	114	219	149	105	82	46	6	114	269	218	158	123	74
Lesotho																					
Liberia																					
Madagascar	3	65	144	208	217	204	178	5	64	121	139	106	88	57	4	65	132	174	161	143	113
Malawi	1	60	202	217	191	112	86	3	93	207	175	108	57	30	2	76	205	195	147	82	54
Mali																					
Mauritania																					
Mauritius																					
Mozambique																					
Namibia	5	178	776	910	665	455	368	9	222	591	481	298	209	154	7	200	685	691	466	316	247
Niger																					
Nigeria	1	18	42	40	37	30	29	1	22	33	23	20	17	13	1	20	38	32	29	23	21
Rwanda																					
Sao Tome and Principe																					
Senegal	4	94	201	196	168	147	214	4	56	80	72	66	57	70	4	75	140	134	116	100	133
Seychelles																					
Sierra Leone	2	62	177	193	163	138	87	4	63	92	107	78	59	36	3	62	134	149	119	96	58
South Africa	2	33	106	132	104	71	42	4	49	89	65	43	25	17	3	41	98	98	73	45	26
Swaziland	4	94	352	437	411	191	116	6	187	352	214	117	43	44	5	140	352	323	258	112	76
Togo																					
Uganda	4	60	227	284	214	183	146	6	66	177	175	115	74	55	5	63	202	230	163	125	96
UR Tanzania	3	62	199	229	207	181	235	4	57	141	116	84	75	65	3	59	170	171	143	125	141
Zambia																					
Zimbabwe																					
Regional rate	2	45	108	113	95	75	66	4	54	95	80	55	40	27	3	45	96	91	72	55	44

Rates are missing where data for smear-positive cases are missing, or where age- and sex-specific population data are not available.

Country data for Africa, cont'd: number of TB cases notified, 1980-2001

Country/territory	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Algeria	2 702	13 916	13 681	13 133	13 832	12 917	11 212	11 325	11 039	11 607	11 332	11 428	13 345	13 345	13 345	13 507	15 329	16 522	15 324	16 647	18 572	18 250
Angola	10 117	7 501	7 911	6 625	10 153	8 653	9 363	8 510	8 184	9 587	10 271	11 134	11 272	8 269	7 157	5 143	15 424	15 066	14 296	12 402	16 062	
Benin	1 835	1 862	1 793	1 804	1 913	2 041	2 162	1 901	2 027	1 941	2 084	2 162	2 420	2 340	2 119	2 332	2 284	2 255	2 316	2 552	2 706	
Botswana	2 662	2 605	2 705	2 883	3 101	2 706	2 627	3 173	2 740	2 532	2 938	3 274	4 179	4 654	4 756	5 665	6 636	7 287	7 960	8 647	9 292	9 618
Burkina Faso	2 577	2 391	2 265	3 061	877	4 547	1 018	1 407	949	1 616	1 497	1 488	1 443	1 443	861	2 572	1 814	1 643	2 074	2 310	2 310	2 406
Burundi	789	643	951	1 053	1 904	2 317	2 569	2 739	3 745	4 608	4 575	4 883	4 464	4 677	3 840	3 326	3 796	5 335	6 546	6 365	6 478	
Cameroun	2 434	2 236	3 765	3 445	3 338	3 393	2 138	3 878	4 982	5 521	5 892	6 814	6 803	7 064	7 312	3 292	3 049	3 952	5 022	7 660	5 251	
Cape Verde	516	344	393	230	285	259		285	276	210	221					303	179	196	205	291		
Central African Republic	651	758	1 475	1 686	468	520	779	499	814	64	2 124	2 045				3 339	3 623	4 459	4 875	5 003		2 550
Chad	220	286	127	1 977	1 430	1 486	1 285	1 086	2 977	2 572	2 591	2 912	2 684	2 871	3 303	3 186	1 936	2 180	2 784	4 710		
Comoros																						
Congo	742	1 214	3 716	4 156	2 776	2 648	3 120	3 473	3 787	4 363	5 91	618	1 179	1 976	2 992	3 615	4 469	3 417	3 863	5 023	9 239	9 735
Côte d'Ivoire	4 197	4 418	5 000	6 000	6 062	5 729	6 072	6 422	6 556	6 982	7 841	8 021	9 093	9 563	14 000	11 988	13 104	13 802	14 841	15 056	12 943	16 533
DR Congo	5 122	3 051	9 905	13 021	20 415	26 082	27 665	27 096	30 272	31 321	21 131	33 782	37 660	36 647	38 477	42 819	45 999	44 783	58 917	59 531	60 627	66 748
Equatorial Guinea					181	17	1	11	20	157	260	331	262	309	356	306	319	366	416			
Eritrea	40 096	42 423	52 403	56 824	65 045	71 731	80 846	85 867	95 521	80 795	88 634	60 006	60 006	926	972	1 034	1 115	951	1 434	1 380	1 598	
Ethiopia	865	796	761	752	654	855	769	864	721	912	917	906										
Gabon																						
Gambia	239	58																				
Ghana	5 207	4 041	4 345	2 651	1 935	3 235	3 925	5 877	5 297	6 017	6 407	7 136	7 044	8 569	17 004	8 636	10 449	10 749	11 352	10 366	10 933	11 923
Guinea		1 884	1 469	832	1 203	1 317	1 128	1 214	1 740	1 869	1 988	2 267	2 941	3 167	3 300	3 523	4 357	4 439	4 768	5 171	5 440	
Guinea-Bissau	645	465	205	376	368	530	1 310	752	778	1 362	1 163	1 246	1 059	1 558	1 647	1 613	1 678	1 445	846	1 164	1 273	
Kenya	11 049	10 027		11 966	10 460	10 022	10 515	10 957	12 592	11 788	12 320	14 599	20 451	22 930	28 142	34 980	39 738	48 936	57 266	64 159	73 017	
Lesotho	4 082	3 830	4 932	3 443	2 923	2 927	21	225	2 346	2 463	2 525	2 994	3 327	3 384	4 334	5 598	6 447	7 806	8 552	9 746		
Liberia	774	1 002	835	885	425	232	384	894														
Madagascar	9 082	7 464	3 573	3 588	8 673	3 220	3 717	4 007	4 393	5 417	6 261	6 015	8 126	9 855	10 671	21 616	12 718		14 661		16 447	
Malawi	4 758	5 033	4 411	4 707	4 404	5 334	6 301	7 581	8 247	9 431	12 364	14 322	15 183	17 105	19 496	19 155	20 630	20 676	22 764	24 396	23 637	26 094
Mali																						
Mauritania	839	933	187	532	1 872	1 621	1 851	2 534	2 578	1 626	2 933	2 631	3 113	3 204	3 075	3 087	3 655	5 022	4 142	4 466	4 216	
Mauritius	7 576	9 427	2 327	2 333	3 977	4 406	2 257	3 722	3 928	4 040	5 284	3 064	4 316	3 996		3 849	3 837	3 788	3 617	3 649	3 067	
Mozambique	132	157	121	152	118	111	119	117	114	129	119	134	130	159	149	131	116	121	120	154	160	123
Namibia	7 457	6 984	5 787	5 937	5 204	5 645	8 263	10 896	13 863	15 958	15 889	16 609	15 085	16 588	17 158	17 882	18 443	18 842	19 672	21 329	21 158	22 094
Niger																						
Nigeria	9 877	10 838	10 949	10 212	11 439	14 937	14 071	19 723	25 700	13 342	20 122	19 626	14 802	11 601	8 449	13 423	15 020	16 660	20 249	24 157	25 821	45 842
Rwanda	1 495	1 386		1 364	1 419	1 327	2 460	3 287	4 145	4 741	6 387	3 200				3 054	3 535	4 710	6 112	6 483	6 093	5 473
Sao Tome and Principe	131	37	40	59	49	40	8	55	13		17	120	97		41				106	96	97	97
Senegal	2 014	2 573	1 612	2 417	1 065	927	6 145	5 611	5 965	4 977	6 781	7 408	6 841	6 841	6 913	7 561	8 525	8 232	8 245	7 282	8 554	
Seychelles	16		16	16	10	10	24	14	10	6	41		5			8	15	18	11	21	20	19
Sierra Leone																						
South Africa	55 310	59 943	64 115	62 556	62 717	59 349	55 013	57 406	61 486	68 075	80 400	77 652	82 539	89 786	90 292	73 917	109 328	125 913	142 281	148 164	151 239	148 257
Swaziland		143	3 059	1 955				1 098	1 352	1 394	1 531		1 458			2 050	2 364	3 022	3 653	4 167	5 877	6 118
Togo	208	126	204	174	343	745	596	1 184	1 071	940	1 324	1 243	1 223	1 005	1 137	1 520	1 654	1 623	1 250	1 249	1 409	
Uganda	1 058	1 170	497	2 029			1 392	1 464	3 066	1 045	14 740	19 016	20 662	21 579	26 994	25 316	27 196	28 349	28 228	31 597	30 372	36 829
UR Tanzania	11 483	12 122	11 748	11 753	12 092	13 698	15 452	16 920	18 206	19 262	22 249	25 210	28 462	31 460	34 799	39 847	44 416	46 433	51 231	52 437	54 442	61 603
Zambia	5 321	6 162	6 525	6 860	7 272	8 246	8 716	10 025	12 876	14 266	16 863	23 373	25 448	30 496	35 222	35 958	40 417		45 240	49 806	46 259	
Zimbabwe	4 057	4 051	4 577	3 881	5 694	4 759	5 233	5 848	6 002	6 432	9 132	11 710	16 237	20 125	23 995	30 831	35 735	43 762	47 077	50 138	50 855	56 222
Total	219 802	224 102	240 263	258 842	264 928	296 626	301 724	333 842	373 438	365 432	418 499	411 993	433 943	418 995	550 183	504 309	586 641	598 911	688 620	750 038	773 221	811 172
number reporting	40	41	39	41	37	41	41	43	44	41	43	40	37	42	38	45	44	42	45	41	36	30
percent reporting	87	89	85	89	80	89	89	93	96	89	93	87	80	91	83	98	96	91	98	89	78	65

Country data for Africa, cont'd: case notification rates, 1980-2001

Country/territory	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Algeria	14	70	66	62	63	57	49	48	45	45	47	45	44	50	49	49	54	58	52	56	61	59
Angola	143	103	105	84	125	103	109	96	90	103	107	113	110	78	65	45	132	125	115	97	122	
Benin	53	52	49	48	49	51	52	45	46	43	45	45	49	45	40	42	40	39	39	42	43	
Botswana	294	278	280	289	301	254	239	280	235	211	237	256	318	344	342	398	457	492	529	567	603	619
Burkina Faso	37	34	31	41	11	58	13	17	11	18	17	16	16	15	9	25	17	15	19	21	20	20
Burundi	19	15	22	23	40	48	51	53	70	84	81	85	76	79	64	55	62	87	106	102		100
Cameroon	28	25	41	36	34	21	36	45	49	51	51	57	55	56	56	25	22	28	35	53	35	
Cape Verde	178	118	133	77	93	84	89	89	84	63	65	65				80	46	49	50		67	
Central African Republic	28	32	60	67	18	20	29	18	29	2	72	68				100	106	127	136	137	67	
Chad	5	6	3	41	29	29	25	20	54	45	44	49	43	45	51	47	28	30	38	62		
Comoros	44	71	210	229	148	138	158	170	185	202	26	27	50	81	118	139	167	124	136	171	306	313
Congo	50	50	54	62	60	54	55	56	56	57	62	62	68	70	100	83	89	92	97	96	81	101
Côte d'Ivoire	19	11	35	44	67	83	86	81	88	88	57	88	94	88	89	96	100	95	122	120	119	127
DR Congo																						
Equatorial Guinea																						
Eritrea	114	118	142	149	165	177	193	199	214	176	187	122	119	0	185	47	74	101	116	117	145	147
Ethiopia	125	112	104	99	84	106	93	101	82	101	98	94	93	95	99	103	86	126	118	133		
Gabon	37	9																				
Gambia	47	36	37	22	15	25	29	42	37	41	42	46	44	52	101	50	59	59	61	55	57	60
Ghana		39	30	16	23	25	21	22	30	31	32	36	45	46	46	48	58	58	61	64	67	
Guinea																						
Guinea-Bissau	85	59	26	46	44	63	152	85	86	148	123	128	106	152	157	150	152	128	74	99	106	
Kenya	68	59		65		53	49	49	50	55	50	51	58	79	86	103	125	138	167	191	209	233
Lesotho	300	275	346	236	196	192	1	14	145	149	150	174	190	189	237	277	294	332	395	426	479	
Liberia	41	51	41	42		19	10	17	41				95	88	88	68	39	70				
Madagascar	100	80	37	36	86	31	35	36	39	47	52	49	64	76	80	157	90	97				100
Malawi	77	79	68	70	63	74	82	93	96	104	131	148	155	174	197	191	202	198	212	221	209	225
Mali	12	13	3	7	25	21	23	31	31	19	33	29	34	34	32	31	36	48	39	40	37	
Mauritania	489	592	142	139	231	249	125	201	207	208	265	150	206	186		169	164	156	145	141	115	
Mauritius	14	16	12	15	12	11	12	11	11	12	11	13	12	15	14	12	10	11	10	13	14	11
Mozambique	63	58	47	47	40	43	62	83	104	119	117	118	104	110	109	110	110	110	112	119	116	119
Namibia						436	383	301	223	280	194	176	120	365		97	647	654	726	645	596	628
Niger	13	50	13	11	10	11	8	8	9	8	67			7	43	22	34	34	34	39	40	
Nigeria	15	16	16	15	16	20	18	25	32	16	23	22	16	12	9	14	15	16	19	22	23	39
Rwanda	29	26		24	25	22	40	51	62	69	94	49				61	68	82	95	91	80	69
Sao Tome and Principe	140	39	41	59	48	38	8	51	12		15	103		80	33			80	71	70	69	
Senegal	36	45	28	40		17	14	91	81	84	68	90	96	87	85	91	100	94	92	79	89	
Seychelles	25	0	25	25	15	15	36	21	15	9	59			7		11	20	23	14	26	25	23
Sierra Leone	23	26	26	9	23	24	10	3	3		16	36	41	66	63	48	79	77	78	85	102	
South Africa	190	201	210	200	196	181	164	168	176	191	221	209	218	233	230	185	268	304	338	347	349	339
Swaziland	25	518	322					158	187	186		195		180		245	277	347	410	458	635	653
Togo	8	5	8	6	12	25	19	37	33	28	38	35	34	27	30	40	42	40	29	28	31	
Uganda	8	9	4	15		9	9	9	19	6	85	107	112	114	138	126	131	133	133	140	130	153
UR Tanzania	61	62	58	57	56	62	68	72	75	76	85	93	102	109	116	129	140	142	153	153	155	171
Zambia	91	102	104	106	109	120	123	136	170	183	210	282	299	349	392	390	427					
Zimbabwe	57	55	60	49	69	55	58	63	62	69	89	111	151	183	213	269	305	367	387	404	403	437
Regional rate	60	59	62	64	64	70	69	74	80	76	85	81	83	78	100	89	101	101	113	120	121	124

Country data for Africa, cont'd: new smear-positive cases, 1993-2001

Country/territory	Number of cases										Rate (per 100 000 population)									
	1993	1994	1995	1996	1997	1998	1999	2000	2001		1993	1994	1995	1996	1997	1998	1999	2000	2001	
Algeria	6 793	5 735	6 556	7 740	7 462	7 845	8 328	7 953			25	21	23	27	26	26	26	27	26	
Angola	4 874	4 337	3 804	8 016	8 246	7 333	7 379	9 053			46	40	34	69	68	59	58	69		
Benin	1 653	1 618	1 839	1 868	1 939	1 988	2 192	2 286			32	30	33	33	33	33	36	36		
Botswana	1 508	1 668	1 903	2 530	2 824	3 112	2 746	3 091	3 057		111	120	134	174	191	207	180	201	197	
Burkina Faso	1 861	1 527	1 121	1 533	2 022	2 782	2 924				6	10	10	13	10	12	13	14	13	
Burundi	2 316	1 883	2 896	2 312	3 548	4 374	5 832	3 960			31	25	18	25	33	45	47		47	
Cameroon											18	15	22	17	25	31	40	27		
Cape Verde													29	30	26	25			32	
Central African Republic													54	58	65	74	75		37	
Chad													30	13						
Comoros													17	17	15	15	16	12		
Congo													77	93	72	72	76	140	139	
Côte d'Ivoire	7 012	8 254	8 927	9 093	9 850	10 047	8 497	10 920			51	57	61	60	64	64	53	67		
DR Congo	14 924	20 914	24 125	24 609	33 442	34 923	36 123	42 054			36	47	52	52	69	70	71	80		
Equatorial Guinea													55	51	54	66				
Eritrea																				
Ethiopia	5 752	9 040	13 160	15 957	18 864	21 597	30 510	33 028			11	16	23	27	31	35	48	51		
Gabon	395	486	263	577	889	916					38	45	24	51	76					
Gambia													70	64	69	73	68			
Ghana	5 778	2 638	6 474	7 254	7 757	6 877	7 316	7 712			34	15	37	40	42	36	38	39		
Guinea	2 082	2 158	2 263	2 844	2 981	3 362	3 563	3 920			30	30	31	38	39	43	44	48		
Guinea-Bissau													89	84	76	47	60	44		
Kenya	10 149	11 324	13 934	16 978	19 040	24 029	27 197	28 773	31 307		39	43	51	61	66	82	91	94	100	
Lesotho	1 405	1 330	1 361	1 788	2 398	2 476	2 729	3 041			78	73	73	94	123	125	136	149		
Liberia	1 547	1 154	668								77	56	31			48				
Madagascar	6 881	7 366	8 026	8 456	9 639						53	55	58	60	64			67		
Malawi													60	63	66	73	82	74	73	
Mali	1 740	1 866	2 173	3 178	2 558	2 558	2 690	2 527			18	19	21	30	24		24	22		
Mauritania													91	104						
Mauritius													10	9	10	10	11	10	7	
Mozambique	9 526	9 677	10 566	10 478	11 116	12 116	12 825	13 257	13 964		63	61	65	62	65	69	72	72	75	
Namibia													44	176	195	212	218	223	249	
Niger	463	1 865	1 492	1 970	2 189	2 631	2 693				5	21	16	20	22	25	25			
Nigeria	1 723	9 476	10 662	11 235	13 161	15 903	17 423	23 410			2	10	10	11	12	12	14	15	20	
Rwanda													37	39	49	69	61	48	41	
Sao Tome and Principe																				
Senegal	2	4 599	5 421	5 940	5 340	5 454	5 011	6 094					65	70	61	61	55	63		
Seychelles											3		8	14	17	11	13	14	15	
Sierra Leone													35	36	55	56	54	56	59	
South Africa													58	103	130	157	169	175	191	
Swaziland													79	261	23	23	21	22	136	
Togo													23	23	23	21	21	22		
Uganda													63	76	74	81	83	82	74	
UR Tanzania	15 569	17 164	19 955	21 472	22 010	23 726	24 125	24 049	24 685		54	57	65	68	67	71	70	68	69	
Zambia													107	109	128	114	124	122		
Zimbabwe	5 331	8 965	11 965	14 512	14 492	14 414	14 392	15 370			48	78	102	122	119	116	114	120		
Total	101 320	121 005	212 910	264 650	276 022	324 648	349 133	355 266	375 997		19	22	38	46	47	53	56	56	57	

Notes

DR CONGO Data are not routinely collected from prisons, army, and private sector.

ETHIOPIA Data are not routinely collected from federal hospitals, army, and refugee camps.

MADAGASCAR Some prisons and military hospitals contribute data, but not all.

NIGERIA Cohort analysis is for cases registered between 4th quarter 1999 and 3rd quarter 2000.

SOUTH AFRICA Data are not routinely collected from the military health service.

UGANDA Although Uganda is a DOTS country, health units in Kampala are not yet implementing the strategy. They are responsible for about a quarter of smear-positive notifications but provide outcome data for relatively few patients (these have been reported under non-DOTS outcomes).

ZAMBIA Sixty percent of notifications are from two provinces, Lusaka and Copperbelt.

The Americas

The Americas: Summary of TB control policies

COUNTRY	MICROSCOPY (A)	SCC (B)	DOT (C)	OUTCOME MONITORING (D)	CATEGORY AS OF 31/12/01*	DOTS NEWLY IMPLEMENTED IN 2001
ANGUILLA					1	
ANTIGUA AND BARBUDA					4	
ARGENTINA					4	
BAHAMAS					0	
BARBADOS					4	X
BELIZE					4	
BERMUDA					5	
BOLIVIA					4	
BRAZIL					3	
BRITISH VIRGIN ISLANDS					1	
CANADA					4	
CAYMAN ISLANDS					4	X
CHILE					4	
COLOMBIA					1	
COSTA RICA					3	
CUBA					4	
DOMINICA					0	
DOMINICAN REPUBLIC					3	
ECUADOR					3	
EL SALVADOR					4	
GRENADA					0	
GUATEMALA					3	
GUYANA					3	
HAITI					3	
HONDURAS					4	
JAMAICA					4	
MEXICO					3	
MONTSERRAT					4	X
NETHERLANDS ANTILLES					5	
NICARAGUA					4	
PANAMA					3	
PARAGUAY					2	
PERU					4	
PUERTO RICO					4	
SAINT KITTS AND NEVIS					4	
SAINT LUCIA					4	
ST VINCENT & GRENADINES					4	
SURINAME					1	
TRINIDAD AND TOBAGO					1	
TURKS & CAICOS ISLANDS					1	
URUGUAY					4	
USA					4	
US VIRGIN ISLANDS					0	
VENEZUELA					3	

Microscopy (a) Use of smear microscopy for diagnosis
 SCC (b) Short course chemotherapy
 DOT (c) Directly observed therapy
 Outcome monitoring (d) Monitoring of treatment outcomes by cohort analysis
 * See table 1 for definition of categories

	implemented in all units/areas
	implemented in some units/areas
	not implemented
	unknown

Note: responses refer to DOTS units/areas if the country is classified as having implemented DOTS.

Country data for the Americas: notification, detection and DOTS coverage, 2001

Country/Territory	Country information														DOTS										non-DOTS			
	Notified TB				New confirmed*				Estimated TB				Detection rate				DOTS		% of		Notifications		All cases		New ss+		% of	
	All cases		New ss+		New confirmed*		Estimated TB		Detection rate		DOTS		% of		Notifications		All cases		New ss+		Notifications		All cases		New ss+		% of	
	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate
Pop thousands	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	aa	ab
Anguilla	12				3	24	1	11							1	100	1	2	1	2	50	100						
Antigua and Barbuda	65		1	2	4	7	2	3	25	50					4	100	6 282	17	3 068	8	39	58						
Argentina	37 488	11 456	31	5 595	15		17 835	48	7 965	21	64	70				4	92											
Bahamas	308				140	46	60	20																				
Barbados	268	6	2	6	2		45	17	20	7	13	30			4	100	6	2	6	2	30	100						
Belize	231	136	59	53	23		96	41	42	18	142	126			4	100	136	59	53	23	126	46						
Bermuda	63				3	4									5													
Bolivia	8 516	10 531	124	6 672	78		18 409	216	8 278	97	57	81			4	100	10 531	124	6 672	78	81	78						
Brazil	172 559	74 466	43	38 478	22		110 511	64	49 177	28	67	78			3	32	7 658	4	4 086	2	8	71			66 808	34 392	66	
British Virgin Islands	24				4	15			2	7					1													
Canada	31 015	1 703	5	502	2		2 010	6	902	3	85	56			4	100	1 703	5	502	2	56	53						
Cayman Islands	40	1	3	1	2	4	1	2	50	100					4	100	1	3	1	3	100	100						
Chile	15 402	3 006	20	1 355	9		3 106	20	1 394	9	97	97			4	100	3 006	20	1 355	9	97	66						
Colombia	42 803	11 480	27	8 022	19		19 970	47	8 946	21	57	90			1										11 480	8 022	83	
Costa Rica	4 112	630	15	385	9		635	15	284	7	99	136			3	67	418	10	252	6	89	76			212	133	76	
Cuba	11 237	929	8	562	5		1 468	13	660	6	63	85			4	100	929	8	562	5	85	74						
Dominica	71				11	15			5	7																		
Dominican Republic	8 507	4 766	56	2 622	31		11 325	133	4 983	59	42	53			3	10	402	5	353	4	7	100			4 364	2 269	67	
Ecuador	12 880	6 015	47	4 439	34		18 140	141	8 136	63	33	55			3	26	528	4	436	3	5	90			5 487	4 003	79	
El Salvador	6 400	1 458	23	1 003	16		3 895	61	1 741	27	37	58			4	100	1 458	23	1 003	16	58	81						
Grenada	94				4	5			2	2																		
Guatemala	11 687	2 419	21	1 669	14		9 578	82	4 281	37	25	39			3	84	2 419	21	1 669	14	39	79			344	102	32	
Guyana	763	422	55	174	23		787	103	345	45	54	50			3	12	78	10	72	9	21	100			4 161	2 062	56	
Haiti	8 270	10 224	124	5 607	68		27 159	328	11 407	138	38	49			3	49	6 063	73	3 545	43	31	69			222	142	70	
Honduras	6 575	4 435	67	2 839	43		5 787	88	2 563	39	77	111			4	95	4 213	64	2 697	41	105	70						
Jamaica	2 598	121	5	75	3		201	8	89	3	60	84			4	100	121	5	75	3	84	67			944	566	70	
Mexico	100 368	18 879	19	15 103	15		34 192	34	15 284	15	55	99			3	70	17 935	18	14 537	14	95	97						
Montserrat	3				9					4					4	100												
Netherlands Antilles	217	5	2	4	2										5										5	4	80	
Nicaragua	5 208	2 447	47	1 510	29		3 582	69	1 608	31	68	94			4	100	2 447	47	1 510	29	94	74						
Panama	2 899	1 711	59	575	20		1 415	49	632	22	121	91			3	57	911	31	451	16	71	58			800	124	17	
Paraguay	5 636	2 073	37	915	16		3 491	62	1 569	28	59	58			2	7	109	2	83	1	5	81			1 964	832	49	
Peru	26 093	37 197	143	21 685	83		51 231	196	22 952	88	73	94			4	100	37 197	143	21 685	83	94	78						
Puerto Rico	3 952	121	3	71	2		294	7	118	3	41	60			4	100	121	3	71	2	60	66						
Saint Kitts and Nevis	38	2	5		4	11	2	5	50						4	100	2	5										
Saint Lucia	149	15	10	6	4		24	16	11	7	63	55			4	100	15	10	6	4	55	67						
St Vincent & Grenadines	114	10	9	3	3		32	28	15	13	31	20			4	100	10	9	3	3	20	30						
Suriname	419	79	19	35	8		293	70	130	31	27	27			1										79	35	56	
Trinidad and Tobago	1 300	206	16	152	12		172	13	76	6	120	200			1										206	152	77	
Turks & Caicos Islands	17	3	17	1	6		3	20	2	9	100	50			1										3	1	50	
Uruguay	3 361	689	20	340	10		973	29	436	13	71	78			4	100	689	20	340	10	78	74						
US Virgin Islands	122				14	12			5	4																		
USA	285 926	15 980	6	5 600	2		14 434	5	6 207	2	111	90			4	100	15 980	6	5 600	2	90	44						
Venezuela	24 632	6 251	25	3 476	14		10 337	42	4 621	19	60	75			3	89	5 681	23	3 120	13	68	66			570	356	74	

* these data are not required by WHO, but are provided by some countries, particularly those in the European Region

Country data for the Americas, cont'd: treatment outcomes for cases registered in 2000 - DOTS and non-DOTS control strategies

Country/Territory	New smear-positive cases - DOTS										Retreatment cases - DOTS										New smear-positive cases - non-DOTS																			
	Regist- ered					comple- ted					Regist- ered					comple- ted					Regist- ered					comple- ted					Regist- ered					comple- ted				
	a	c	d	e	f	g	h	b	% eval	% not success	i	k	l	m	n	o	p	j	% eval	% not success	q	s	t	u	v	w	x	r	% eval	% not success										
Anguilla	4	100	0	0	0	0	0	0	100												2 684	20	20	3	0	7	5	46	39											
Antigua and Barbuda	2 493	33	21	6	0	5	4	30	54																															
Argentina																																								
Bahamas	45	78	0	9	0	2	2	9	78																															
Barbados																																								
Belize																																								
Bermuda	6 212	73	6	4	1	9	4	3	79		804	49	11	12	2	8	6	11	61																					
Bolivia	3 951	56	17	3	0	5	3	16	73		622	42	1	4	0	17	3	33	43		30 056	48	23	4	0	9	6	9	71											
Brazil																																								
British Virgin Islands	225	48	32	13	0	2	2	2	80																															
Canada																																								
Cayman Islands	1 360	82		9	0	6	2	1	82		150	32	26	8	1	18	1	13	58		5	0	40	0	0	0	60	0	40											
Chile																																								
Colombia	99	66	10	6	2	5	2	9	76		48	31	6	13	2	4	15	29	38		1 634	70	10	5	1	8	6	0	80											
Costa Rica	673	91	2	4	1	1	1	0	93		58	78	7	10	3	2	0	0	84		250	34	16	12	1	15	4	18	50											
Cuba																																								
Dominica																																								
Dominican Republic	238	78	1	2	0	9	6	4	79		80	66	4	8	3	13	8	0	70		2 522	33	37	5	2	20	1	3	70											
Ecuador																																								
El Salvador	1 008	78	1	7	1	5	2	6	79		181	63	3	9	3	18	3	0	66																					
Grenada																																								
Guatemala	1 908	75	11	5	1	7	1	0	86		164	63	16	4	4	10	2	0	79		85	27	14	14	7	33	5	0	41											
Guyana	34	82	9	6	0	3	0	0	91												3 200	54	16	5	1	15	5	4	70											
Haiti	2 687	60	12	6	1	10	6	5	73		24	50	4	8	8	17	8	4	54		814	67	12	8	0	7	6	0	79											
Honduras	1 548	88	1	5	1	3	2	0	89		144	49	7	6	2	4	13	19	56		338	57	10	9	2	11	6	6	67											
Jamaica	99	5	40	23	0	11	20	0	45																															
Mexico	11 200	64	12	6	1	9	5	3	76		138	33	4	8	7	12	4	32	37		5		20																	
Montserrat																																								
Netherlands Antilles	1 437	70	13	5	1	9	2	0	82		230	65	10	6	2	15	2	0	75																					
Nicaragua	239	43	23	9	2	15	8	0	67		15	0	47	7	0	40	7	0	47		221	10	43	5	2	29	12	0	52											
Panama	69	68	9	12	4	3	4	0	77		13	62	8	8	8	15	0	0	69		831	17	48	4	0	23	2	5	65											
Paraguay	22 230	90	0	2	2	3	1	3	90		4 521	78	0	4	7	6	1	4	78																					
Peru	68	72	19			4		4	72																															
Puerto Rico																																								
Saint Kitts and Nevis	8	88	13	0	0	0	0	0	100		1	100	0	0	0	0	0	0	100		4	100	0	0	0	0	0	0	100											
Saint Lucia	9	100	0	0	0	0	0	0	100		3	100	0	0	0	0	0	0	100		37	51	19	16	0	14	0	0	70											
St Vincent & Grenadines																					194	22	46	11	2	6	2	11	68											
Suriname																					2	0	0	0	0	100	0	0	0											
Trinidad and Tobago																																								
Turks & Caicos Islands	344	85	0	13	1	1	0	0	85																															
Uruguay																																								
US Virgin Islands	5 802		76	9		2	3	9	76																															
USA	3 390	76	0	4	0	13	6	0	76																															
Venezuela																																								

Country data for the Americas, cont'd: age and sex distribution of smear-positive cases in DOTS areas, 2001 (absolute numbers)

	MALE							FEMALE							ALL						
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+
Anguilla																					
Antigua and Barbuda																					
Argentina	49	410	355	265	224	215	232	52	405	326	162	115	114	132	101	815	681	427	339	329	364
Bahamas																					
Barbados	0	1	1	1	0	0	1	0	0	0	1	1	0	0	0	1	1	2	1	0	1
Belize	0	0	5	9	7	9	11	0	0	3	4	1	2	2	0	0	8	13	8	11	13
Bermuda																					
Bolivia	165	1 235	761	483	489	359	355	241	915	664	302	226	194	283	406	2 150	1 425	785	715	553	638
Brazil	45	507	763	542	508	235	162	35	353	295	243	187	106	105	80	860	1 058	785	695	341	267
British Virgin Islands																					
Canada	3	28	53	62	44	24	91	2	24	51	32	18	13	57	5	52	104	94	62	37	148
Cayman Islands	0	0	1	0	0	0	0								0	0	1	0	0	0	0
Chile	2	78	183	213	190	116	138	9	69	85	76	58	55	83	11	147	268	289	248	171	221
Colombia																					
Costa Rica	2	14	35	47	33	17	25	0	12	22	12	10	13	10	2	26	57	59	43	30	35
Cuba	0	35	136	87	40	55	68	1	26	16	23	17	20	38	1	61	152	110	57	75	106
Dominica																					
Dominican Republic																					
Ecuador	4	67	82	27	20	25	11	3	58	57	26	17	20	19	7	125	139	53	37	45	30
El Salvador	20	101	144	100	78	62	101	22	68	86	59	59	53	50	42	169	230	159	137	115	151
Grenada																					
Guatemala	27	171	201	169	137	98	97	33	180	173	118	101	74	90	60	351	374	287	238	172	187
Guyana	1	6	22	18	6	0	1	0	3	5	7	2	0	1	1	9	27	25	8	0	2
Haiti	45	479	485	364	211	106	71	72	564	533	314	172	71	58	117	1 043	1 018	678	383	177	129
Honduras	8	29	495	335	322	245	22	9	23	332	338	324	185	30	17	52	827	673	646	430	52
Jamaica	3	10	9	21	5	1	1	2	2	7	6	3	2	3	5	12	16	27	8	3	4
Mexico	121	1 401	1 599	1 639	1 526	1 177	1 474	138	1 090	989	814	906	757	906	259	2 491	2 588	2 453	2 432	1 934	2 380
Montserrat																					
Netherlands Antilles																					
Nicaragua	24	213	203	139	93	75	95	32	188	173	92	67	52	64	56	401	376	231	160	127	159
Panama	5	39	83	62	51	35	22	5	30	47	35	18	8	11	10	69	130	97	69	43	33
Paraguay	0	10	12	10	7	6	6	0	11	7	7	5	1	1	0	21	19	17	12	7	7
Peru	11	5 591	2 887	1 550	979	843	696	11	4 015	2 382	1 117	626	480	497	22	9 606	5 269	2 667	1 605	1 323	1 193
Puerto Rico	0	4	4	10	12	6	11	0	3	1	3	9	2	6	0	7	5	13	21	8	17
Saint Kitts and Nevis																					
Saint Lucia	0	1	1	0	1	3	0						1	1	0	1	1	0	1	3	0
St Vincent & Grenadines																					
Suriname																					
Trinidad and Tobago																					
Turks & Caicos Islands																					
Uruguay	2	33	38	49	42	31	44	4	25	31	7	15	3	16	6	58	69	56	57	34	60
US Virgin Islands																					
USA	17	321	612	816	871	520	637	23	235	404	347	242	171	384	40	556	1 016	1 163	1 113	691	1 021
Venezuela																					
Regional total	3 564	39 192	54 934	38 850	23 362	12 826	10 081	5 094	37 343	41 683	23 662	12 879	7 073	5 714	8 658	76 535	96 617	62 512	36 241	19 899	15 795

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for the Americas, cont'd: age and sex distribution of smear-positive cases in non-DOTS areas, 2001 (absolute numbers)

	MALE						FEMALE						ALL								
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+
Anguilla																					
Antigua and Barbuda																					
Argentina	29	272	256	230	247	189	204	33	269	235	141	127	101	117	62	541	491	371	374	290	321
Bahamas																					
Barbados																					
Belize																					
Bermuda																					
Bolivia																					
Brazil	423	3 948	4 773	4 642	3 777	2 118	1 532	481	3 279	3 008	2 053	1 514	944	913	904	7 227	7 781	6 695	5 291	3 062	2 445
British Virgin Islands																					
Canada																					
Cayman Islands																					
Chile																					
Colombia	223	1 037	703	722	869	646	653	186	865	544	429	436	350	359	409	1 902	1 247	1 151	1 305	996	1 012
Costa Rica	0	12	18	25	17	12	11	1	6	9	8	6	3	5	1	18	27	33	23	15	16
Cuba																					
Dominica																					
Dominican Republic																					
Ecuador	35	606	750	242	182	226	105	34	533	527	241	163	188	171	69	1 139	1 277	483	345	414	276
El Salvador																					
Grenada																					
Guatemala																					
Guyana	0	9	25	26	6	2	0	0	3	11	9	7	3	1	0	12	36	35	13	5	1
Haiti	27	273	300	223	108	63	41	41	318	310	184	101	38	35	68	591	610	407	209	101	76
Honduras	4	18	14	9	15	12	5	4	2	15	14	15	11	4	8	20	29	23	30	23	9
Jamaica																					
Mexico	9	47	40	44	80	52	92	8	41	4	31	46	30	42	17	88	44	75	126	82	134
Montserrat																					
Netherlands Antilles	0	0	0	4	0	0	0	0	0	1	0	0	0	0	0	0	1	4	0	0	0
Nicaragua																					
Panama	1	19	20	14	15	8	6	2	9	11	7	6	3	3	3	28	31	21	21	11	9
Paraguay	18	104	94	75	82	68	67	22	80	64	39	46	30	40	40	184	158	114	128	98	107
Peru																					
Puerto Rico																					
Saint Kitts and Nevis																					
Saint Lucia																					
St Vincent & Grenadines																					
Suriname	1	2	8	2	2	4	5	0	2	4	2	1	0	2	1	4	12	4	3	4	7
Trinidad and Tobago	5	10	21	36	24	17	18	5	10	11	15	9	9	8	10	20	32	51	33	26	26
Turks & Caicos Islands																					
Uruguay																					
US Virgin Islands																					
USA																					
Venezuela																					
Regional total	933	7 753	9 595	8 142	6 369	3 868	3 003	1 012	6 870	6 634	4 169	2 901	1 984	1 838	1 945	14 623	16 229	12 311	9 270	5 852	4 841

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for the Americas, cont'd: smear-positive notification rates by age and sex, 2001

	MALE							FEMALE							ALL						
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+
Anguilla																					
Antigua and Barbuda	1	20	22	22	25	29	29	2	20	21	13	12	14	12	2	20	22	18	18	21	19
Argentina																					
Bahamas	0	5	4	4	0	0	10	0	0	0	4	6	0	0	0	2	2	4	3	0	4
Barbados	0	0	28	73	91	199	224	0	0	17	33	14	48	40	0	0	22	53	54	126	132
Belize																					
Bermuda																					
Bolivia	10	148	121	114	163	188	230	15	111	104	68	70	91	148	12	130	112	91	115	137	185
Brazil	2	26	39	43	52	49	43	2	21	23	18	19	19	20	2	24	31	30	35	33	30
British Virgin Islands																					
Canada	0	1	2	2	2	2	5	0	1	2	1	1	1	3	0	1	2	2	1	1	4
Cayman Islands																					
Chile	0	6	15	19	24	22	30	0	6	7	7	7	10	13	0	6	11	13	15	16	20
Colombia	3	25	21	26	47	63	73	3	22	15	14	21	31	31	3	24	18	20	34	46	49
Costa Rica	0	6	16	25	27	26	36	0	5	10	7	9	14	13	0	6	13	16	18	20	24
Cuba	0	5	13	10	6	11	13	0	4	2	3	3	4	7	0	4	7	6	4	7	10
Dominica																					
Dominican Republic																					
Ecuador	2	51	78	35	39	80	41	2	46	56	34	34	63	57	2	49	67	34	36	71	50
El Salvador	2	15	28	34	35	42	72	2	10	16	17	24	32	27	2	13	22	24	29	37	47
Grenada																					
Guatemala	1	14	25	33	40	45	49	1	15	22	22	29	33	41	1	14	23	28	34	39	45
Guyana	1	19	71	97	42	13	6	0	8	23	29	27	16	9	0	13	46	60	34	14	8
Haiti	4	82	143	160	132	105	82	7	97	144	116	91	55	55	6	90	144	136	109	77	67
Honduras	1	7	105	107	172	215	26	1	4	72	108	167	153	28	1	5	89	108	170	183	27
Jamaica	1	4	4	14	5	1	1	1	1	3	3	3	3	3	1	2	4	8	4	2	2
Mexico	1	14	19	29	41	50	72	1	11	11	14	23	29	36	1	13	15	21	32	39	52
Montserrat																					
Netherlands Antilles	0	0	0	25	0	0	0	0	0	7	0	0	0	0	0	0	3	12	0	0	0
Nicaragua	2	38	55	58	62	89	133	3	34	45	36	41	56	72	3	36	50	47	51	72	99
Panama	1	22	42	40	50	49	36	2	15	24	22	18	13	17	1	18	33	31	34	31	26
Paraguay	2	20	26	26	41	64	88	2	16	18	15	24	26	36	2	18	22	20	33	45	58
Peru	0	209	138	103	94	124	118	0	153	110	69	57	67	71	0	181	123	85	75	95	93
Puerto Rico	0	1	1	4	6	4	6	0	1	0	1	4	1	2	0	1	1	2	5	2	4
Saint Kitts and Nevis																					
Saint Lucia	0	7	8	0	19	90	0	0	3	4	0	0	9	42	0	3	4	0	9	42	0
St Vincent & Grenadines																					
Suriname	2	4	21	7	16	43	48	0	5	11	7	7	0	15	1	4	16	7	11	19	29
Trinidad and Tobago	3	7	21	37	34	39	45	3	7	11	15	13	20	17	3	7	16	26	23	29	30
Turks & Caicos Islands																					
Uruguay	0	12	16	23	24	22	25	1	10	13	3	8	2	6	1	11	14	13	16	11	14
US Virgin Islands																					
USA	0	2	3	4	4	4	4	0	1	2	2	1	1	2	0	1	3	3	3	3	3
Venezuela																					
Regional rate	1	23	25	23	25	27	25	3	23	25	19	18	19	17	3	27	40	39	39	33	30

Rates are missing where data for smear-positive cases are missing, or where age- and sex-specific population data are not available.

Country data for the Americas, cont'd: number of TB cases notified, 1980-2001

Country/territory	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Anguilla	0	0	4	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0
Antigua and Barbuda	8	3	0	1	3	2	7	0	3	3	1	0	6	6	6	3	3	4	4	4	4	1
Argentina	16 406	16 693	17 292	17 305	16 359	15 987	14 681	13 368	13 267	12 636	12 309	12 185	12 606	13 887	13 683	13 450	13 397	12 621	12 276	11 871	11 767	11 456
Bahamas	70	67	54	58	53	63	52	43	51	52	46	53	63	60	78	57	59	88	75	76	82	6
Barbados	64	3	30	17	14	12	7	3	4	5	5	5	6	6	6	3	3	5	7	7	2	3
Belize	21	33	44	140	35	25	23	41	28	31	230	201	65	80	59	95	99	107	123	104	106	136
Bermuda	1	2	5	10	3	3	6	2	1	2	0	3	4	4	0	4	0	4	0	0	0	0
Bolivia	4 412	5 072	4 777	5 178	4 131	7 679	6 837	8 960	10 864	12 563	11 166	11 223	9 520	8 614	9 431	14 422	10 194	9 853	10 132	9 863	10 127	10 531
Brazil	72 608	86 411	87 822	86 617	88 365	84 310	83 731	81 826	82 395	80 048	74 570	84 990	85 955	75 759	75 759	91 013	87 254	83 309	95 009	78 870	77 899	74 466
British Virgin Islands	2 885	2 554	2 515	2 186	2 345	1 980	2 046	1 972	1 947	2 035	1 997	2 018	2 108	2 012	2 074	1 931	1 888	1 976	1 791	1 806	1 694	1 703
Canada	0	2	0	1	1	4	1	0	0	2	2	3	3	2	2	2	0	0	3	0	5	1
Cayman Islands	8 523	7 337	6 941	6 989	6 561	6 644	6 854	6 280	6 324	6 728	6 151	5 498	5 304	4 998	4 138	4 150	4 178	3 880	3 652	3 429	3 021	3 006
Chile	11 589	11 483	12 126	13 716	12 792	12 024	11 639	11 437	11 469	11 329	12 447	12 263	11 199	11 043	8 901	9 912	9 702	8 042	9 155	10 969	11 630	11 480
Colombia	396	521	459	479	393	376	418	434	442	311	230	201	118	313	325	586	636	692	730	851	585	630
Costa Rica	1 133	833	815	762	705	680	656	630	628	581	546	514	410	790	1 681	1 553	1 465	1 346	1 234	1 135	1 135	929
Dominica	20	26	18	16	5	8	35	27	7	13	6	14	13	12	12	8	10	6	5	5	5	4 766
Dominican Republic	2 174	1 778	2 457	2 959	3 100	2 335	2 634	2 459	3 081	3 145	2 597	1 837	3 490	4 033	4 337	4 053	6 302	5 381	5 114	5 767	5 291	4 766
Ecuador	3 950	3 966	3 880	3 985	4 301	4 798	5 687	5 867	5 497	5 480	8 243	6 879	7 313	7 050	9 685	7 893	8 397	9 435	7 164	5 756	6 908	6 015
El Salvador	2 255	2 091	2 171	2 053	1 564	1 461	1 659	1 647	1 693	617	2 367	2 304	2 495	3 347	3 901	2 422	1 886	1 662	1 700	1 623	1 485	1 458
Grenada	17	1	1	6	4	2	1	2	0	4	0	1	3	0	3	4	0	2	2	2	0	0
Guatemala	5 624	6 641	7 277	6 013	6 586	6 570	4 806	5 700	5 739	4 900	3 813	2 631	2 517	2 474	2 508	3 119	3 232	2 948	2 755	2 820	2 913	2 419
Guyana	124	117	135	149	165	215	190	117	150	120	168	134	182	91	266	296	314	407	318	407	422	422
Haiti	8 306	6 550	3 337	6 839	5 803	4 959	8 583	8 514	8 054	8 100	10 237	10 237	10 237	91	266	6 212	6 632	10 116	9 770	9 124	10 420	10 224
Honduras	1 674	1 696	1 714	1 935	2 120	3 377	4 213	4 227	3 962	4 026	3 647	4 560	4 155	3 745	4 291	4 984	4 176	4 030	4 916	4 568	3 984	4 435
Jamaica	176	178	153	157	160	130	88	133	65	86	123	121	111	115	109	109	121	118	121	115	127	121
Mexico	31 247	32 572	24 853	22 795	14 531	15 017	13 180	14 631	15 371	15 489	14 437	15 216	14 446	15 145	16 353	11 329	20 722	23 575	21 514	19 802	18 434	18 879
Montserrat	1	0	0	1	7	9	5	13	6	5	1	1	0	0	0	0	0	0	1	2	0	0
Netherlands Antilles	1 300	3 723	3 082	2 773	2 705	2 604	2 617	2 983	2 737	3 106	2 944	2 797	2 885	2 798	2 750	2 842	3 003	2 806	2 604	2 558	2 402	2 447
Nicaragua	643	580	580	429	413	614	709	765	770	672	846	863	750	1 146	827	1 300	1 314	1 473	1 422	1 387	1 188	1 711
Panama	1 354	1 388	1 415	1 800	1 718	1 931	1 628	1 502	1 438	2 270	2 167	2 283	1 927	2 037	1 850	1 745	2 072	1 946	1 831	2 115	1 950	2 073
Paraguay	16 011	21 925	21 579	22 753	22 792	24 438	24 702	30 571	36 908	35 687	37 905	40 580	52 552	51 675	48 601	45 310	41 739	42 062	43 723	40 345	38 661	37 197
Peru	686	521	473	452	418	338	363	303	275	314	159	241	257	274	263	110	257	201	200	174	121	121
Puerto Rico	7	4	6	2	3	0	0	0	0	0	0	1	4	6	2	5	3	12	5	3	0	2
Saint Kitts and Nevis	41	39	37	48	55	21	34	25	32	28	13	25	26	24	24	11	35	22	20	16	9	15
Saint Lucia	78	11	14	4	23	14	9	3	6	3	2	1	4	13	0	13	6	6	8	9	16	10
St Vincent & Grenadines	78	81	56	78	76	50	60	77	77	70	82	47	58	45	53	53	53	76	85	95	88	79
Suriname	80	82	62	112	108	112	119	122	108	124	120	141	142	112	129	166	204	260	199	159	198	206
Trinidad and Tobago	2	0	2	5	0	4	2	12	12	987	886	759	699	689	666	625	701	708	688	627	645	689
Turks & Caicos Islands	1 874	1 699	1 450	1 359	1 389	1 201	1 082	1 023	951	987	886	759	699	689	666	625	701	708	688	627	645	689
Uruguay	0	1	1	2	3	1	1	2	6	4	4	4	4	10	4	4	0	0	0	0	0	0
US Virgin Islands	27 749	27 373	25 520	23 846	22 255	22 201	22 768	22 517	22 436	23 495	25 701	26 283	26 673	25 287	24 361	22 860	21 119	17 314	18 199	17 521	16 362	15 980
USA	4 233	4 033	4 159	4 266	4 737	4 822	4 974	4 954	4 557	4 524	5 457	5 216	5 444	5 169	4 877	5 578	5 650	5 984	6 273	6 598	6 466	6 251
Venezuela	227 820	248 150	237 316	238 296	226 801	227 022	227 107	233 192	241 834	239 594	231 215	252 221	253 256	166 633	242 018	258 331	256 459	252 536	262 809	240 648	236 181	229 873
Total	42	42	42	42	42	42	42	42	41	41	41	41	39	32	35	38	39	40	39	39	38	40
number reporting	95	95	95	95	95	95	95	95	93	93	93	95	89	73	80	86	89	91	89	89	86	91
percent reporting																						

Country data for the Americas, cont'd: case notification rates, 1980-2001

Country/territory	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Anguilla	0	0	59	0	0	14	0	0	0	0	0	0	0	0		20		0				0
Antigua and Barbuda	13	5	0	2	5	3	11	0	5	5	5	2	0	10			5	6	6	5	6	2
Argentina	58	59	60	59	55	53	48	43	42	39	38	37	38	41	40	39	38	35	34	32	32	31
Bahamas	33	31	25	26	23	27	22	18	21	21	18	20	24	22	28	20	20	30	25	25	27	
Barbados	26	1	12	7	6	5	3	1	2	2	2	2	2			1	1	2	3	1	1	2
Belize	15	22	29	91	22	15	14	24	16	17	31	47	34	41	30	47	48	51	57	47	47	59
Bermuda	2	4	9	18	5	5	10	3	2	3	0	5	7			7	0	6	0	0	0	0
Bolivia	82	93	86	91	71	130	114	146	170	196	170	167	138	122	130	195	134	127	127	121	122	124
Brazil	60	69	69	67	67	62	61	58	58	55	50	57	56		48	57	54	51	57	47	46	43
British Virgin Islands																		14				0
Canada	12	10	10	9	9	8	8	7	7	7	7	7	7	7	7	7	6	7	6	6	6	5
Cayman Islands	0	11	0	5	5	19	5	0	0	8	8	11	11	7		6	0	0	8	0	13	3
Chile	76	65	60	60	55	55	56	50	50	52	47	41	39	33	30	29	29	27	25	23	20	20
Colombia	41	39	41	45	41	38	36	35	34	33	36	34	31	30	24	26	25	20	22	27	28	27
Costa Rica	17	22	19	19	15	14	15	16	15	11	8	6	4	9	9	16	17	18	19	22	15	15
Cuba	12	9	8	8	7	7	6	6	6	6	5	5	4	7	15	14	13	12	11	10	10	8
Dominica	27	35	25	22	7	11	48	38	10	18	8	20	18	10	17	11	14	8	7			
Dominican Republic	38	30	41	48	49	36	40	37	45	45	37	26	48	54	57	53	80	68	63	70	63	56
Ecuador	50	48	46	46	49	53	61	61	56	55	80	66	68	64	86	69	72	79	59	46	55	47
El Salvador	49	45	46	44	33	31	34	34	48	12	46	44	47	62	70	43	29	28	28	26	24	23
Grenada	19	1	1	7	4	2	1	2	0	4	0	1	3	0	3	4	0	2	2	5	0	
Guatemala	82	95	101	82	87	85	61	70	69	57	44	29	27	26	26	31	32	28	26	25	26	21
Guyana	16	15	18	20	22	29	25	16	20	16	23	18	25	12	36	40	42	54	42	54	55	55
Haiti	152	117	58	117	97	81	137	132	122	120		145				83	87	130	124	114	128	124
Honduras	47	46	45	49	52	81	98	95	86	85	75	91	80	70	78	89	72	68	81	73	62	67
Jamaica	8	8	7	7	7	6	4	6	3	4	5	5	5	5	4	4	5	5	5	5	5	5
Mexico	46	47	35	32	20	20	17	19	19	19	17	18	17	17	18	12	22	25	22	20	19	19
Montserrat	9	0	0	9	62	80	45	118	55	46	9	9	0		0			16	43	0	0	2
Netherlands Antilles																						
Nicaragua	45	124	99	86	82	77	75	84	75	83	77	71	71	67	64	64	66	60	54	52	47	47
Panama	33	29	28	21	19	28	32	34	33	29	35	35	30	45	32	49	49	54	51	49	41	59
Paraguay	43	43	43	53	49	54	44	39	36	55	51	53	43	44	39	36	42	38	35	39	35	37
Peru	92	123	119	122	120	125	124	150	178	169	176	185	235	227	210	193	174	173	176	160	151	143
Puerto Rico	21	16	14	14	12	10	11	9	8	9	5	7	7	7	7	7	3	7	5	5	4	3
Saint Kitts and Nevis	16	9	14	5	7	0	0	0	0	0	0	2	10	15	5	13	8	30	13	8	0	5
Saint Lucia	36	34	32	41	46	17	28	20	25	22	10	19	19	19	17	8	25	15	14	11	6	10
St Vincent & Grenadines	80	11	14	4	23	14	9	3	6	3	2	1	4	12	0	12	5	5	7	8	14	9
Suriname	22	23	15	21	20	13	15	20	19	18	20	12	14	11	13	13	13	18	21	23	21	19
Trinidad and Tobago	7	7	6	10	9	10	10	10	9	10	10	12	12	9	10	13	16	20	16	12	15	16
Turks & Caicos Islands	27	0	25	59	0	43	21	118			0	0	0	0		19	22	22	20	105		17
Uruguay	64	58	49	46	46	40	36	34	31	32	29	24	22	22	21	19	22	22	20	19	19	20
US Virgin Islands	0	1	1	2	3	1	1	2	6	4	4	4			9	4	0					
USA	12	12	11	10	9	9	9	9	9	9	10	10	10	10	10	9	9	8	6	7	6	6
Venezuela	28	26	26	26	28	28	28	27	25	24	28	26	27	25	23	26	25	26	27	28	27	25
Regional rate	37	40	37	37	34	34	33	34	35	34	32	34	34	22	32	33	33	32	32	29	28	27

Country data for the Americas, cont'd: new smear-positive cases, 1993-2001

Country/territory	Number of cases										Rate (per 100 000 population)									
	1993	1994	1995	1996	1997	1998	1999	2000	2001		1993	1994	1995	1996	1997	1998	1999	2000	2001	
Anguilla			0		0			0					0		0					0
Antigua and Barbuda			0	2			1	3						3			2	5	2	
Argentina	5 937	5 696	5 698	5 787	5 307	5 186	4 830	4 749	5 595		18	17	16	16	15	14	13	13	15	
Bahamas	41	41	38	25	57	30	37	56			15	15	13	9	20	10	12	18		
Barbados		3	3	5	4	4	2	3	6				1	1	2	2	1	1	2	
Belize	50	36	36	46	32	52	48	44			26	18	18	22	15	24	22	19	23	
Bermuda			2	0			0	0					3	0		0	0	0	0	
Bolivia	6 833	6 905	7 010	6 949	6 458	6 750	6 673	6 458	6 672		97	95	95	92	83	85	82	78	78	
Brazil	39 167	45 650	44 503	43 490	43 490	43 554	41 619	41 186	38 478		25	25	29	28	27	26	25	24	22	
British Virgin Islands					0				0						0					0
Canada	542	404	156	156	487	471	395	506	502		2		1	1	2	2	1	2	2	
Cayman Islands	2	0	0	0	0	2	2	5	1		7		0	0	0	6	5	13	3	
Chile	2 629	1 951	1 561	1 562	1 582	1 576	1 497	1 290	1 355		19	14	11	11	11	11	10	8	9	
Colombia	6 987	6 532	7 530	7 572	6 090	6 969	8 329	8 358	8 022		19	17	20	19	15	17	20	20	19	
Costa Rica		230	245	302	320	353	458	349	385			7	7	8	9	9	12	9	9	
Cuba	565	914	834	835	765	746	720	677	562		5	8	8	8	7	7	6	6	5	
Dominica	6	8	5	7	5	5					8	11	7	10	7	7				
Dominican Republic	2 297	3 177	2 787	3 733	3 162	2 689	3 278	2 907	2 622		31	42	36	48	40	33	40	35	31	
Ecuador	5 325	6 674	5 890	6 426	7 214	4 900	4 300	5 064	4 439		48	59	51	55	60	40	35	40	34	
El Salvador	2 471	2 144		965	882	1 071	1 023	1 008	1 003		45	39	17	15	15	18	17	16	16	
Grenada	0	3	2	0	1	2	3	0			0	3	2	0	1	2	3	0		
Guatemala	2 128	1 994	2 368	2 224	2 218	2 255	2 264	2 052	1 669		22	21	24	22	21	21	20	18	14	
Guyana	51	61	85	71	105	85	178	119	174		7	8	11	10	14	11	24	16	23	
Haiti				3 524	5 497	6 442	6 828	5 887	5 607					46	71	82	85	72	68	
Honduras	2 016	2 385	2 306	1 808	1 928	2 311	2 415	2 415	2 839		38	44	41	31	32	38	39	38	43	
Jamaica	83	61	93	81	84	90	90	90	75		3	2	4	3	3	4	4	3	3	
Mexico	8 164	9 726	9 220	8 495	15 440	11 473	11 968	11 676	15 103		9	11	10	9	16	12	12	12	15	
Montserrat		0				1	2	0				0				16	43	0		
Netherlands Antilles									4										2	
Nicaragua	1 714	1 615	1 568	1 722	1 670	1 648	1 564	1 471	1 510		41	38	35	38	36	34	32	29	29	
Panama	1 046	748	1 066	904	592	1 393	432	410	575		41	29	41	34	22	50	15	14	20	
Paraguay	985	873	748	894	859	850	1 041	900	915		21	19	15	18	17	16	19	16	16	
Peru	35 646	33 925	32 096	26 800	27 498	27 707	24 511	22 580	21 685		157	147	136	112	113	112	97	88	83	
Puerto Rico	117	128	110	126	106	106	106	82	71		3		3	3	3	3	3	2	2	
Saint Kitts and Nevis	2	2	4	2		4	2	0	0		5	5	10	5	5	10	5	0	0	
Saint Lucia		17	11	22	14	10	9	7	6			12	8	16	10	7	6	5	4	
St Vincent & Grenadines	11	0	5	3	2	3	4	9	3		10	0	5	3	2	3	4	8	3	
Suriname				39	31	32	36	37	35					10	8	8	9	9	8	
Trinidad and Tobago		55	7	58	52	82	87	115	152			4	1	5	4	6	7	9	12	
Turks & Caicos Islands							2		1								12		6	
Uruguay	388	381	349	426	423	374	392	348	340		12	12	11	13	13	11	12	10	10	
US Virgin Islands			2	5									2	4						
USA	16 046	14 346	8 013	7 401	6 882	6 630	6 252	5 865	5 600		6	5	3	3	3	2	2	2	2	
Venezuela	2 849	2 738	3 056	3 195	3 234	3 450	3 670	3 525	3 476		14	13	14	14	14	15	15	15	14	
Total	104 931	142 405	138 820	136 657	142 512	139 286	135 068	130 251	129 536		14	19	18	17	18	17	16	16	15	

Notes

ARGENTINA Data are not routinely collected from the private sector.

ECUADOR Data are not routinely collected from the army, police and social security system.

GUATEMALA Data are not routinely collected from the army, police, social security system, and private sector.

PERU Retreatment outcomes include retreatment after relapse, default and failure. Results for relapse cases alone (883 cases registered) are as follows: 82% cured; 0% completed; 3% died; 6% failed; 4% defaulted; 1% transferred; 5% not evaluated.

TRINIDAD AND TOBAGO Age/sex data and outcome data are for all cases (not just new smear-positive cases).

Eastern Mediterranean

Eastern Mediterranean: Summary of TB control policies

COUNTRY	MICROSCOPY (A)	SCC (B)	DOT (C)	OUTCOME MONITORING (D)	CATEGORY AS OF 31/12/01*	DOTS NEWLY IMPLEMENTED IN 2001
AFGHANISTAN					3	
BAHRAIN					4	
CYPRUS					0	
DJIBOUTI					4	
EGYPT					4	
IRAN					4	
IRAQ					4	
JORDAN					4	
KUWAIT					0	
LEBANON					4	
LIBYA					0	
MOROCCO					4	
OMAN					4	
PAKISTAN					3	
QATAR					4	
SAUDI ARABIA					4	
SOMALIA					4	
SUDAN					4	
SYRIAN ARAB REPUBLIC					4	
TUNISIA					4	
UNITED ARAB EMIRATES					4	
WEST BANK AND GAZA					0	
YEMEN					4	

Microscopy (a) Use of smear microscopy for diagnosis
 SCC (b) Short course chemotherapy
 DOT (c) Directly observed therapy
 Outcome monitoring (d) Monitoring of treatment outcomes by cohort analysis
 * See table 1 for definition of categories

	implemented in all units/areas
	implemented in some units/areas
	not implemented
	unknown

Note: responses refer to DOTS units/areas if the country is classified as having implemented DOTS.

Country data for the Eastern Mediterranean: notification, detection and DOTS coverage, 2001

Country/Territory	Country information													DOTS					non-DOTS			
	Notified TB				Estimated TB				DOTS				% of pop	Notifications				% of pulm cases ss+	Notifications			
	Pop thousands	All cases number	rate	New ss+ number	rate	All cases number	rate	New ss+ number	rate	All cases number	rate	New ss+ number		All cases number	rate	New ss+ number	rate	DDR %	All cases number	rate	New ss+ number	% of pulm cases ss+
	a	b	b/a	c	c/a	d	d/a	e	e/a	f	f/a	g	h	i	i/a	j	j/a	k	l	m	n	
Afghanistan	22 474	9 930	44	4 639	21	70 531	314	31 739	141	14	15	3	12	9 930	44	4 639	21	15	63			
Bahrain	652	120	18	89	14	336	52	151	23	36	59	4	100	120	18	89	14	59	88			
Cyprus	790					52	7	23	3													
Djibouti	644	4 198	652	1 312	204	4 047	629	2 023	314	104	65	4	100	4 198	652	1 312	204	65	49			
Egypt	69 080	10 549	15	4 514	7	26 015	38	11 707	17	41	39	4	100	10 549	15	4 514	7	39	65			
Iran	71 369	11 786	17	5 529	8	36 956	52	16 630	23	32	33	4	100	11 786	17	5 529	8	33	70			
Iraq	23 584	10 478	44	3 559	15	30 512	129	13 730	58	34	26	4	100	10 478	44	3 559	15	26	52			
Jordan	5 051	342	7	94	2	448	9	202	4	76	47	4	100	342	7	94	2	47	53			
Kuwait	1 971					593	30	266	13													
Lebanon	3 556	516	15	171	5	711	20	320	9	73	53	4	100	516	15	171	5	53	56			
Libyan Arab Jamahiriya	5 408					1 273	24	573	11													
Morocco	30 430	28 285	93	12 804	42	35 125	115	15 754	52	81	81	4	100	28 285	93	12 804	42	81	84			
Oman	2 622	292	11	156	6	306	12	138	5	95	113	4	100	292	11	156	6	113	84			
Pakistan	144 971	34 066	23	10 935	8	247 416	171	111 090	77	14	10	3	24	17 333	12	6 255	4	6	44	16 733	4 680	37
Qatar	575	284	49	77	13	144	25	65	11	197	118	4	100	284	49	77	13	118	54			
Saudi Arabia	21 028	3 327	16	1 665	8	9 187	44	4 134	20	36	40	4	100	3 327	16	1 665	8	40	74			
Somalia	9 157	6 852	75	4 640	51	32 270	352	14 485	158	21	32	4	100	6 852	75	4 640	51	32	84			
Sudan	31 809	23 997	75	11 136	35	59 897	188	26 953	85	40	41	4	97	15 438	49	9 482	30	35	79	8 559	1 654	27
Syrian Arab Republic	16 610	4 990	30	1 490	9	12 249	74	5 512	33	41	27	4	100	4 990	30	1 490	9	27	53			
Tunisia	9 562	1 945	20	1 077	11	3 261	34	1 468	15	60	73	4	100	1 945	20	1 077	11	73	91			
United Arab Emirates	2 654	74	3	69	3	533	20	240	9	14	29	4	100	74	3	69	3	29	93			
West Bank and Gaza	3 311					900	27	405	12													
Yemen	19 114	13 029	68	4 968	26	19 995	105	8 998	47	65	55	4	97	7 476	39	4 242	22	47	74	5 553	726	20

* these data are not required by WHO, but are provided by some countries, particularly those in the European Region

Country data for the Eastern Mediterranean, cont'd: treatment outcomes for cases registered in 2000 - DOTS and non-DOTS

Country/Territory	New smear-positive cases - DOTS									Retreatment cases - DOTS									New smear-positive cases - non-DOTS											
	% Regist- ered	% cured	% comple- ted	% failed	% default trans- ferred	% not eval	% success	% c+d		% Regist- ered	% cured	% comple- ted	% failed	% default trans- ferred	% not eval	% success	% q	% s	% t	% compl- eted	% failed	% default trans- ferred	% x	% not eval	% success					
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z				
Afghanistan	2918	79	6	3	3	6	2	0	86		198	73	6	5	3	11	4	0	78		218	40	44	3	3	10	0	84		
Bahrain	22	73	0	27	0	0	0	0	73																					
Cyprus																														
Jibouti	1391	48	14	2	1	21		14	62		268	27	9	0	3	22		37	37											
Egypt	4611	75	12	3	2	5	3	0	87		956	52	11	7	12	13	5	0	63											
Iran	5866	81	4	6	2	3	3	0	85		606	63	13	6	5	6	5	2	76											
Iraq	3194	86	5	3	2	3	1	0	92																					
Jordan	89	89	1	2	1	4	2	0	90		6	83	17	0	0	0	0	0	100											
Kuwait																														
Lebanon	190	89	3	4	1	3	1	0	92		5	80						20	80											
Syrian Arab Jamahiriya																														
Morocco	12872	82	7	3	1	7	1	0	89																					
Oman	112	93	0	4	3	0	0	0	93									0	0											
Pakistan	4074	58	16	4	1	17	4	0	74		907	37	17	6	3	29	8	0	54											
Qatar	53	66	0	8	0	0	0	0	66																					
Saudi Arabia	1285	62	11	7	0	13	6	0	73		139	43	15	7	3	13	11	8	58											
Somalia	3776	81	2	4	2	3	2	7	83		351	53	1	5	5	3	1	33	54											
Sudan	12440	56	23	4	2	6	3	6	79																					
Syrian Arab Republic	1481	69	10	4	3	11	4	0	79									0	0											
Tunisia	1099	87	4	3	2	2	2	0	91		42	74	0	5	2	10	10	0	74		2	159	17	36	2	1	22	16	5	53
United Arab Emirates	73	56	18	7	4	5	10	0	74									81	57	5	0	2	27	9	0	0	62			
West Bank and Gaza																														
Yemen	4455	65	10	4	1	12	4	4	75		437	64	8	7	6	11	4	0	72		1	110	36	23	2	0	23	5	10	59

Country data for the Eastern Mediterranean, cont'd: age and sex distribution of smear-positive cases in DOTS areas, 2001 (absolute numbers)

	MALE						FEMALE						ALL								
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+
Afghanistan	129	379	349	274	204	139	103	146	799	888	586	375	179	89	275	1178	1237	860	579	318	192
Bahrain	0	1	2	2	6	1	6	0	1	2	0	2	0	0	0	2	4	2	8	1	6
Cyprus	17	267	331	125	65	51	23	17	156	134	59	44	15	8	34	423	465	184	109	66	31
Djibouti	34	586	879	614	453	268	159	57	438	396	265	207	109	49	91	1024	1275	879	660	377	208
Egypt	37	468	528	371	310	300	647	104	623	402	279	327	442	691	141	1091	930	650	637	742	1338
Iran	10	722	737	275	260	200	142	26	362	295	147	171	126	86	36	1084	1032	422	431	326	228
Iraq	2	7	22	10	10	8	7	0	8	6	1	0	9	4	2	15	28	11	10	17	11
Jordan																					
Kuwait	0	22	20	18	16	8	8	3	25	28	7	6	4	5	3	47	48	25	22	12	13
Lebanon																					
Libyan Arab Jamahiriya																					
Morocco	85	2 200	2 256	1 731	929	561	606	156	1 477	1 046	596	402	399	360	241	3 677	3 302	2 327	1 331	960	966
Oman	1	10	8	12	6	8	8	4	17	8	5	9	5	8	5	27	16	17	15	13	16
Pakistan	94	863	730	488	485	392	267	194	874	733	472	306	198	125	288	1 737	1 463	960	791	590	392
Qatar	1	2	0	3	4	0	3	0	1	0	0	1	1	1	1	3	0	3	5	1	4
Saudi Arabia	7	141	221	163	135	62	106	28	161	163	88	44	39	44	35	302	384	251	179	101	150
Somalia	125	899	880	476	310	257	196	91	439	413	259	129	97	69	216	1 338	1 293	735	439	354	265
Sudan	732	1 018	1 368	1 085	777	462	301	590	787	910	715	467	212	58	1 322	1 805	2 278	1 800	1 244	674	359
Syrian Arab Republic	8	317	248	134	108	64	47	26	210	116	56	50	42	28	34	527	364	190	158	106	75
Tunisia	23	141	185	157	103	83	100	9	62	42	47	30	42	53	32	203	227	204	133	125	153
United Arab Emirates																					
West Bank and Gaza																					
Yemen	66	622	562	420	290	200	87	125	567	502	383	239	140	39	191	1 189	1 064	803	529	340	126
Regional total	1 371	8 665	9 326	6 358	4 471	3 064	2 816	1 576	7 007	6 084	3 965	2 809	2 059	1 717	2 947	15 672	15 410	10 323	7 280	5 123	4 533

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for the Eastern Mediterranean, cont'd: age and sex distribution of smear-positive cases in non-DOTS areas, 2001 (absolute numbers)

	MALE						FEMALE						ALL								
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+
Afghanistan																					
Bahrain																					
Cyprus																					
Djibouti																					
Egypt																					
Iran																					
Iraq																					
Jordan																					
Kuwait																					
Lebanon																					
Libyan Arab Jamahiriya																					
Morocco																					
Oman																					
Pakistan	45	328	161	185	179	104	39	47	133	182	178	115	54	17	92	461	343	363	294	158	56
Qatar																					
Saudi Arabia																					
Somalia																					
Sudan																					
Syrian Arab Republic																					
Tunisia																					
United Arab Emirates																					
West Bank and Gaza																					
Yemen	16	73	69	71	60	52	27	29	80	60	69	54	52	14	45	153	129	140	114	104	41
Regional total	61	401	230	256	239	156	66	76	213	242	247	169	106	31	137	614	472	503	408	262	97

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for the Eastern Mediterranean, cont'd: smear-positive notification rates by age and sex, 2001

	MALE												FEMALE					ALL				
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	
Afghanistan Bahrain Cyprus	3	17	22	24	27	28	33	3	38	60	56	52	37	27	3	27	40	39	39	33	30	
	0	2	4	2	10	5	59	0	2	5	0	8	0	0	0	2	4	1	9	3	31	
	12	424	944	546	330	352	271	12	245	331	176	144	69	63	12	334	615	326	217	182	147	
	0	8	17	14	15	17	13	0	6	8	6	7	6	3	0	7	13	11	11	11	7	
Egypt Iran Iraq Jordan Kuwait	0	6	10	9	11	19	56	1	8	8	7	12	28	54	1	7	9	8	11	23	55	
	0	30	41	23	33	43	44	1	16	17	13	22	26	24	0	23	29	18	28	34	33	
	0	1	5	4	7	8	10	0	2	2	0	0	9	6	0	1	3	2	4	8	8	
	0	7	6	9	13	10	8	1	8	9	3	4	4	4	0	7	7	5	8	7	6	
Libyan Arab Jamahiriya Morocco Oman Pakistan Qatar	2	69	89	94	78	92	104	3	48	43	31	33	53	52	2	59	66	62	55	71	76	
	0	4	5	8	4	13	24	1	7	5	5	13	11	24	0	5	5	7	7	12	24	
	0	8	9	9	12	15	11	1	7	10	9	9	8	5	1	8	9	9	10	11	8	
	1	5	0	3	6	0	47	0	3	0	0	5	15	34	1	4	0	2	6	3	43	
Saudi Arabia Somalia Sudan Syrian Arab Republic Tunisia United Arab Emirates	0	7	17	14	11	11	32	1	8	13	10	7	10	14	0	7	15	12	10	10	24	
	6	102	151	124	125	181	195	4	50	69	65	49	61	58	5	76	110	94	86	118	121	
	11	32	57	66	71	65	59	9	26	38	44	42	28	10	10	29	48	55	56	45	32	
	0	17	19	15	23	24	19	1	11	9	7	11	14	10	1	14	14	11	17	19	14	
West Bank and Gaza Yemen	2	14	23	25	25	34	36	1	6	5	7	7	16	19	1	10	14	16	16	25	27	
	2	40	48	62	110	107	59	3	39	45	53	56	59	22	2	39	46	58	77	79	38	
Regional rate	1	18	27	24	24	29	34	2	14	17	16	17	19	21	2	16	23	20	21	24	26	

Rates are missing where data for smear-positive cases are missing, or where age- and sex-specific population data are not available.

Country data for the Eastern Mediterranean, cont'd: number of TB cases notified, 1980-2001

Country/territory	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Afghanistan	71 685	71 554	41 752	52 502	18 784	10 742	14 351	18 091	16 051	14 386	4 332	23 067						1 290	3 084	3 314	7 107	9 930
Bahrain	219	262	156	232	208	194	156	120	142	122	117	142	140	114		43	49	45	83	36	23	120
Cyprus	69	69	86	73	39	61	48		39		23	29	43	37	37	36	24	47	45	39	31	
Djibouti		2 265	671		1 489	2 262	1 864	1 978	2 030	2 040	2 100	2 900	2 884	3 489	3 311		3 332	3 830	3 785	4 133	3 971	4 198
Egypt	1 637	1 306	1 805	1 932	1 572	1 308	1 209	22 063	1 378	1 492	2 142	3 634	8 876	3 426	3 911	11 145	12 338	13 971	12 662	11 763	10 762	10 549
Iran	42 717	11 728	9 509	8 589	10 493	8 728	8 032	10 034	9 967	12 005	9 255	14 246	14 121	20 569	13 021	15 936	14 189	12 659	11 794	12 062	11 850	11 786
Iraq	11 809	10 614	7 741	6 970	6 807	6 485	6 846	6 517	6 504	8 032	14 684			18 553	19 733	9 697	29 196	26 007	28 410	29 897	9 697	10 478
Jordan	298	646	860	856	672	769	592	537	553	484	439	390	504	427	443	498	468	397	380	373	306	342
Kuwait	847	819	880	855	812	717	611	540	480	488	277	330	282	217	237	336	400	528	564			
Lebanon		67	75	284	410	1 943	2 257	2 478				884	884		940	983	836	701	640	679	571	516
Libyan Arab Jamahiriya	718	481	512	610	367	325	276	331	416	265	442	239	1 164			1 440	1 282		1 575	1 615	1 341	
Morocco	24 878	28 637	28 095	26 944	22 279	26 790	27 553	27 159	25 717	26 756	27 658	27 638	25 403	27 626	30 316	29 829	31 771	30 227	29 087	29 854	28 852	28 285
Oman	1 872	928	897	802	843	861	1 265	616	477	478	482	442	367	281	304	276	300	298	287	249	321	292
Pakistan	316 340	324 576	326 492	117 739	91 572	111 419	149 004	179 480	194 323	170 562	156 759	194 323		73 175		13 142	4 307	89 599	20 936	11 050	34 066	
Qatar	257	213	172	206	203	250	220	248	223	191	184	195		200		304	257	212	253	259	279	284
Saudi Arabia	10 956	8 263	8 529	7 551	7 163	3 966	3 696	3 029	2 433	2 583	2 415	2 221	2 016	2 386	2 518			3 138	3 235	3 507	3 452	3 327
Somalia				2 838	2 719	2 722	3 079	7 322	2 728	1 323												
Sudan	32 971	47 431				1 509	2 460	800	683	701	212	16 423	19 503	37 516	23 178	14 320	20 230	20 894	22 318	26 875	24 807	23 997
Syrian Arab Republic	1 689	1 908	1 538	1 867	2 111	2 163	3 942	4 290	4 952	5 504	6 018	5 651	5 437	5 127	5 127	4 404	5 200	4 972	5 417	5 447	5 090	4 990
Tunisia	2 504	2 316	2 554	3 082	2 501	2 510	2 487	2 272	2 309	2 403	2 054	2 064	2 164	2 565	2 376	2 383	2 387		2 211	2 158	2 038	1 945
United Arab Emirates	522	638	597	507	534	568	464	818	339	308	285	234	227		426		507		773	66	115	74
West Bank and Gaza																						
Yemen	191	139	136	136	123	113	63	82	85	145	64	89	97			77	40		18			
																14 428	14 364	12 007	12 383	13 027	10 648	13 029
Total	522 179	514 860	433 357	234 555	171 691	186 405	230 475	288 840	271 839	250 271	229 948	295 155	84 108	190 581	107 901	121 781	145 397	136 273	233 923	171 091	137 997	165 060
number reporting	19	21	20	20	21	22	22	22	21	21	20	20	17	15	16	19	21	18	23	21	21	19
percent reporting	83	91	87	87	91	96	96	96	91	91	87	87	74	65	70	83	91	78	100	91	91	83

Country data for the Eastern Mediterranean, cont'd: case notification rates, 1980-2001

Country/territory	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Afghanistan	477	483	288	372	137	80	109	139	124	109	32	159						6	15	16	33	44
Bahrain	63	73	42	60	52	47	36	27	31	26	24	28	27	21		8	8	7	14	6	4	18
Cyprus	11	11	14	12	6	9	7	5	6	3	4	6	6	5	5		3	6	6	5	4	
Djibouti		683	201	437	639	493	483	456	426	417	558	547	547	656	618		596	663	633	670	628	652
Egypt	4	3	4	4	3	3	2	42	3	3	4	6	15	6	6	18	20	22	19	18	16	15
Iran	109	29	22	19	23	18	16	19	18	21	16	24	23	33	21	25	22	19	17	17	17	17
Iraq	91	79	56	49	46	43	44	41	40	48	85	11	14	98	101	48	142	126	135	134	42	44
Jordan	13	28	36	34	26	28	21	19	18	16	13	11	14	11	11	12	11	9	8	8	6	7
Kuwait	62	57	59	55	50	42	34	28	23	22	13	16	14	12	13	20	24	31	32			
Lebanon	3	3	3	11	15	73	85	93				32	31		31	31	26	21	19	20	16	15
Libyan Arab Jamahiriya	24	15	15	17	10	9	7	8	10	6	10	5	26			30	26		31	31	25	
Morocco	128	144	138	129	104	122	122	118	109	111	112	110	99	106	114	110	115	107	101	102	97	93
Oman	166	78	72	62	62	60	85	39	29	28	27	24	19	14	15	13	13	13	12	10	13	11
Pakistan	389	387	378	132	99	117	152	178	187	159	143	173		62		11	3	7	67	15	8	23
Qatar	112	85	62	68	61	70	58	62	53	44	41	42	41	41		59	49	40	46	47	49	49
Saudi Arabia	114	82	80	68	61	32	29	22	17	17	16	14	13	15	15			17	17	18	17	16
Somalia				42	41	41	46	107	39	19						34	52	57	53	57	65	75
Sudan	171	238				7	11	3	3	3	1	65	75	141	85	51	71	72	75	88	80	75
Syrian Arab Republic	19	21	20	19	21	21	37	38	43	46	49	44	41		37	31	36	33	35	35	31	30
Tunisia	39	35	38	44	35	34	33	30	29	30	25	25	25	30	27	27	26		24	23	22	20
United Arab Emirates	51	57	48	38	37	37	28	47	18	16	14	11	10		19		21		31	3	4	3
West Bank and Gaza	13	9	9	8	7	6	3	4	4	7	3	4	4			3	1		1			
Yemen																97	92	74	73	74	58	68
Regional rate	183	176	143	75	54	56	68	83	76	68	61	76	21	46	26	28	33	30	51	36	28	33

Country data for the Eastern Mediterranean, cont'd: new smear-positive cases, 1993-2001

Country/territory	Number of cases										Rate (per 100 000 population)									
	1993	1994	1995	1996	1997	1998	1999	2000	2001		1993	1994	1995	1996	1997	1998	1999	2000	2001	
Afghanistan					618	1 833	1 669	2 892	4 639						3	9	8	13	21	
Bahrain	82		17	31	22	25	21	94	89		15		3	5	4	4	3	15	14	
Cyprus			6	3	19	20	9	4					1	0	2	3	1	1		
Djibouti	1 668	1 743	1 744	1 744	1 904	1 690	1 564	1 391	1 312		314	325		312	330	283	254	220	204	
Egypt		1 811	4 229	5 084	5 469	4 915	5 094	4 606	4 514			3	7	8	9	8	8	7	7	
Iran		4 615	5 347	5 373	5 253	5 105	5 426	5 866	5 529			7	8	8	8	7	8	8	8	
Iraq	5 240	5 781	3 194	10 320	8 164	8 933	9 908	3 194	3 559		28	30	16	50	39	41	44	14	15	
Jordan	173	161	187	170	136	110	102	89	94		4	4	4	4	3	2	2	2	2	
Kuwait	148	155	175	153	201	185					8	9	10	9	12	10				
Lebanon		148	197	198	206	224	249	202	171			5	6	6	6	7	7	6	5	
Libyan Arab Jamahiriya				515			803	607						11			16	11		
Morocco		14 171	14 278	14 134	13 426	13 420	12 872	12 804					52	51	50	47	46	43	42	
Oman	123	135	135	164	165	156	120	164	156		6	6	6	7	7	7	5	6	6	
Pakistan	11 020		2 578	1 849		14 974	6 248	3 285	10 935		9		2	1	1	11	5	2	8	
Qatar			60	46	39	69	58	53	77				12	9	7	13	10	9	13	
Saudi Arabia	800				1 568	1 644	1 680	1 595	1 665		5				9	9	9	8	8	
Somalia		1 168	1 572	2 894	3 093	3 121	3 461	3 776	4 640			16	21	38	40	39	41	43	51	
Sudan		3 728	8 761	8 978	10 835	10 820	11 047	12 311	11 136			14	31	31	37	36	36	40	35	
Syrian Arab Republic			1 295	1 523	1 423	1 593	1 577	1 584	1 490				9	10	9	10	10	10	9	
Tunisia	1 006	983	1 243	1 005		1 196	1 066	1 099	1 077		12	11	14	11		13	11	12	11	
United Arab Emirates							31	73	69								1	3	3	
West Bank and Gaza			9	24		8							0	1		0				
Yemen			3 681	4 371	4 717	4 896	5 427	5 565	4 988				25	28	29	29	31	30	26	
Total	20 260	20 428	46 857	58 723	57 966	74 943	68 980	61 322	68 924		5	5	11	13	13	16	15	13	14	

Notes

BAHRAIN Treatment outcomes are available for Bahraini nationals only.

EGYPT Data are not routinely collected from the military, police, and private hospitals/clinics.

MOROCCO Data are not routinely collected from the military. Outcome data reflect routine collection of data on patients who transfer in which, at national level, are subtracted from those who have transferred out.

OMAN Cohort analysed for treatment outcomes includes Omani nationals only.

PAKISTAN Data are not routinely collected from prisons and the military.

QATAR Cohort analysed for treatment outcomes excludes 14 patients who left the country during treatment.

SAUDI ARABIA Cohort analysed for treatment outcomes includes nationals of Saudi Arabia only.

SYRIAN ARAB REPUBLIC
Data are not routinely collected from the military.

UNITED ARAB EMIRATES
Cohort analysed for treatment outcomes includes nationals of United Arab Emirates only.

Europe

Europe: Summary of TB control policies

COUNTRY	MICROSCOPY (A)	SCC (B)	DOT (C)	OUTCOME MONITORING (D)	CATEGORY AS OF 31/12/01*	DOTS NEWLY IMPLEMENTED IN 2001
ALBANIA					3	X
ANDORRA					4	
ARMENIA					3	
AUSTRIA					4	
AZERBAIJAN					2	
BELARUS					1	
BELGIUM					4	X
BOSNIA & HERZEGOVINA					4	
BULGARIA					3	X
CROATIA					1	
CZECH REPUBLIC					4	
DENMARK					1	
ESTONIA					4	
FINLAND					1	
FRANCE					1	
GEORGIA					4	
GERMANY					4	
GREECE					1	
HUNGARY					4	
ICELAND					4	X
IRELAND					1	
ISRAEL					4	
ITALY					3	
KAZAKHSTAN					4	
KYRGYZSTAN					3	
LATVIA					4	
LITHUANIA					3	
LUXEMBOURG					4	X
MALTA					4	
MONACO					5	
NETHERLANDS					4	
NORWAY					4	
POLAND					3	
PORTUGAL					4	
REPUBLIC OF MOLDOVA					3	X
ROMANIA					3	
RUSSIAN FEDERATION					3	
SAN MARINO					4	
SLOVAKIA					4	
SLOVENIA					4	
SPAIN					1	
SWEDEN					4	X
SWITZERLAND					1	
TAJIKISTAN					1	
TFYR MACEDONIA					3	X

Microscopy (a) Use of smear microscopy for diagnosis
 SCC (b) Short course chemotherapy
 DOT (c) Directly observed therapy
 Outcome monitoring (d) Monitoring of treatment outcomes by cohort analysis
 * See table 1 for definition of categories

	implemented in all units/areas
	implemented in some units/areas
	not implemented
	unknown

Note: responses refer to DOTS units/areas if the country is classified as having implemented DOTS.

Europe: Summary of TB control policies (continued)

COUNTRY	MICROSCOPY (A)	SCC (B)	DOT (C)	OUTCOME MONITORING (D)	CATEGORY AS OF 31/12/01*	DOTS NEWLY IMPLEMENTED IN 2001
TURKEY					1	
TURKMENISTAN					3	
UKRAINE					3	X
UNITED KINGDOM					1	
UZBEKISTAN					3	
YUGOSLAVIA					3	X

Microscopy (a) Use of smear microscopy for diagnosis
 SCC (b) Short course chemotherapy
 DOT (c) Directly observed therapy
 Outcome monitoring (d) Monitoring of treatment outcomes by cohort analysis
 * See table 1 for definition of categories

	implemented in all units/areas
	implemented in some units/areas
	not implemented
	unknown

Note: responses refer to DOTS units/areas if the country is classified as having implemented DOTS.

Country data for Europe: notification, detection and DOTS coverage, 2001

Country/Territory	Country information																								DOTS										non-DOTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	Pop				Notified TB				New confirmed*				Estimated TB				Detection rate				DOTS				DOTS				non-DOTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	All cases		b/a	rate	New ss+		c/a	number	rate	All cases		e/a	rate	New ss+		f/a	rate	All cases		b/e	New ss+		g/h	% pop	rate	All cases		i/a	rate	New ss+		j/a	rate	% of pultm cases ss+	Notifications		k	New ss+		l	Notifications		m	n	%																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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* these data are not required by WHO, but are provided by some countries, particularly those in the European Region

Country data for Europe, cont'd: treatment outcomes for cases registered in 2000 - WHO TB control strategy DOTS and other non-DOTS control strategies

Country/Territory	New smear-positive cases - DOTS										Retreatment cases - DOTS										New smear-positive cases - non-DOTS									
	Regist- ered	% a	% cured	% died	% failed	% default	% trans- ferred	% not eval	% success	c+d	Regist- ered	% i	% cured	% died	% failed	% default	% trans- ferred	% not eval	% success	k+l	Regist- ered	% q	% cured	% died	% failed	% default	% trans- ferred	% not eval	% success	s+t
Albania																														
Andorra																														
Armenia																														
Austria																														
Azerbaijan																														
Belarus																														
Belgium																														
Bosnia & Herzegovina																														
Bulgaria																														
Croatia																														
Czech Republic																														
Denmark																														
Estonia																														
Finland																														
France																														
Georgia																														
Germany																														
Greece																														
Hungary																														
Iceland																														
Ireland																														
Israel																														
Italy																														
Kazakhstan																														
Kyrgyzstan																														
Latvia																														
Lithuania																														
Luxembourg																														
Malta																														
Monaco																														
Netherlands																														
Norway																														
Poland																														
Portugal																														
Republic of Moldova																														
Romania																														
Russian Federation																														
San Marino																														
Slovakia																														
Slovenia																														
Spain																														
Sweden																														
Switzerland																														
Tajikistan																														
TFYR Macedonia																														
Turkey																														
Turkmenistan																														
Ukraine																														
United Kingdom																														
Uzbekistan																														
Yugoslavia (total)																														
- Montenegro and Serbia																														
- Kosovo																														

Country data for Europe, cont'd: age and sex distribution of smear-positive cases in DOTS areas, 2001 (absolute numbers)

	MALE							FEMALE							ALL						
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+
Albania	2	8	7	8	8	9	14	0	4	7	3	2	3	6	2	12	14	11	10	12	20
Andorra	0														0						
Armenia	0	71	57	59	34	16	4	1	15	10	7	4	3	3	1	86	67	66	38	19	7
Austria	1	15	27	39	37	37	27	1	8	13	15	4	6	18	2	23	40	54	41	43	45
Azerbaijan	0	1	3					0		1					0	1	4				
Belarus																					
Belgium	8	31	40	47	44	23	54	6	14	21	24	15	7	18	14	45	61	71	59	30	72
Bosnia & Herzegovina	6	39	70	110	89	53	99	7	45	50	34	17	50	127	13	84	120	144	106	103	226
Bulgaria	1	15	20	23	23	18	13	1	11	16	13	5	2	9	2	26	36	36	28	20	22
Croatia																					
Czech Republic	0	18	39	47	85	43	50	0	10	17	8	11	9	54	0	28	56	55	96	52	104
Denmark																					
Estonia	0	10	25	43	37	24	14	0	6	11	17	11	6	8	0	16	36	60	48	30	22
Finland																					
France																					
Georgia	4	142	233	199	117	46	46	2	63	63	37	22	18	22	6	205	296	236	139	64	68
Germany	3	3	89	136	106	94	119	1	36	59	48	42	26	79	4	39	148	184	148	120	198
Greece																					
Hungary	1	11	42	97	133	73	42	0	10	17	31	27	13	37	1	21	59	128	160	86	79
Iceland	0	1					1	0			1				0	1		1		1	1
Ireland																					
Israel	1	7	26	17	17	10	42	2	6	14	8	2	2	18	3	13	40	25	19	12	60
Italy	4	43	130	98	63	50	99	4	37	77	46	24	14	54	8	80	207	144	87	64	153
Kazakhstan	38	1038	1477	1485	1011	429	211	88	1040	1062	570	263	194	173	126	2078	2539	2055	1274	623	384
Kyrgyzstan	0	170	287	212	159	54	44	0	133	183	105	45	22	48	0	303	470	317	204	76	92
Latvia	0	48	109	138	101	64	32	2	24	33	41	31	18	20	2	72	142	179	132	82	52
Lithuania	0	11	34	74	62	29	16	0	17	25	26	14	11	22	0	28	59	100	76	40	38
Luxembourg																					
Malta	0				1		1	0			1				0			1	1		1
Monaco																					
Netherlands	1	51	51	33	29	12	24	1	26	32	19	9	5	10	2	77	83	52	38	17	34
Norway	0	6	8	8	4	1	8	1	6	9	1	1	2	4	1	12	17	9	5	3	12
Poland	0	5	10	32	47	16	20	0	6	9	9	9	5	12	0	11	19	41	56	21	32
Portugal	9	156	329	356	218	109	140	13	110	160	83	36	30	63	22	266	489	439	254	139	203
Republic of Moldova	0	69	57	35	20	0	3	1	6	2	1	4	2	0	1	75	59	36	24	2	3
Romania	4	112	228	265	263	104	73	9	108	133	64	51	28	34	13	220	361	329	314	132	107
Russian Federation	2	481	862	911	769	249	118	1	115	147	184	110	42	89	3	596	1009	1095	879	291	207
San Marino																					
Slovakia	0	8	13	30	48	26	22	1	4	9	12	8	4	41	1	12	22	42	56	30	63
Slovenia	0	4	11	30	27	11	7	0	5	11	11	3	5	14	0	9	22	41	30	16	21
Spain																					
Sweden																					
Switzerland																					
Tajikistan																					
TFYR Macedonia	1	7	13	17	12	16	9	1	14	15	9	6	2	6	2	21	28	26	18	18	15
Turkey																					
Turkmenistan	1	114	155	91	43	11	10	3	67	80	35	22	12	14	4	181	235	126	65	23	24
Ukraine																					
United Kingdom																					
Uzbekistan	5	105	147	81	50	28	19	14	114	132	62	39	28	30	19	219	279	143	89	56	49
Yugoslavia (total)	3	52	48	44	34	31	18	5	49	46	23	25	23	20	8	101	94	67	59	54	38
Montenegro and Serbia																					
Kosovo	3	52	48	44	34	31	18	5	49	46	23	25	23	20	8	101	94	67	59	54	38
Regional total	95	2 852	4 647	4 767	3 692	1 686	1 399	165	2 109	2 464	1 548	862	592	1 053	260	4 961	7 111	6 315	4 554	2 278	2 452

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for Europe, cont'd: age and sex distribution of smear-positive cases in non-DOTS areas, 2001 (absolute numbers)

	MALE					FEMALE					ALL				
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	65+
Albania	1	5	11	9	11	11	16	1	8	3	2	5	4	3	19
Andorra															
Armenia	2	83	63	34	20	8	5	0	25	21	15	6	4	2	7
Austria	3							2							
Azerbaijan	2							4							
Belarus															
Belgium															
Bosnia & Herzegovina															
Bulgaria															
Croatia	0	16	32	93	63	44	32	1	16	18	27	17	14	46	78
Czech Republic															
Denmark	1	10	15	20	15	4	9	5	5	12	13	7	5	3	12
Estonia															
Finland	0	1	9	13	17	13	43	0	3	4	5	8	10	22	65
France	10	124	230	260	205	119	211	17	131	132	102	63	40	183	394
Georgia															
Germany															
Greece	0	10	23	29	20	17	37	0	7	11	7	4	7	27	64
Hungary															
Iceland															
Ireland	0	6	12	14	8	7	7	0	4	6	3	1	1	5	12
Israel															
Italy															
Kazakhstan															
Kyrgyzstan	0	6	0	5	0	0	0	0	0	0	0	0	8	0	0
Latvia															
Lithuania	0	24	78	123	93	59	60	1	16	34	31	21	17	37	97
Luxembourg	0	0	1	0	0	0	2	0	2	2	1	1	1	2	4
Malta															
Monaco															
Netherlands															
Norway															
Poland	5	73	232	571	615	259	302	4	93	139	161	115	58	348	650
Portugal															
Republic of Moldova	1	83	140	195	138	62	29	5	52	59	45	29	12	10	39
Romania	56	678	1 442	1 660	1 737	871	612	61	605	692	433	340	200	313	925
Russian Federation	24	1 643	3 455	5 001	4 666	1 777	823	36	904	1 168	1 190	930	400	509	1 332
San Marino															
Slovakia															
Slovenia															
Spain	13	160	355	351	215	134	232	15	140	237	116	37	21	83	315
Sweden	1	10	15	5	3	1	23	1	4	12	8	2	2	18	41
Switzerland	0	9	18	13	7	10	7	0	3	9	3	3	1	7	14
Tajikistan	8	129	152	89	43	17	16	0	61	83	62	25	11	8	24
TFYR Macedonia	0	3	4		3	5	7	0	3	3	5	1	1	1	8
Turkey															
Turkmenistan	0	55	140	105	50	35	11	0	46	57	35	18	20	13	24
Ukraine	9	757	1 721	2 720	2 393	1 050	559	18	544	649	525	354	235	418	977
United Kingdom	10	99	135	105	96	81	117	15	74	104	57	54	38	105	222
Uzbekistan	2	285	758	442	346	225	114	7	223	499	276	228	188	151	265
Yugoslavia															
Regional total	148	4 269	9 041	11 857	10 764	4 809	3 274	193	2 969	3 954	3 122	2 269	1 298	2 314	5 588

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for Europe, cont'd: smear-positive notification rates by age and sex, 2001

	MALE						FEMALE						ALL								
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+
Albania	1	5	7	7	13	18	36	0	5	4	2	5	7	8	0	5	6	5	9	12	21
Andorra																					
Armenia	0	43	42	31	27	20	6	0	12	11	7	4	5	3	0	28	27	18	15	12	4
Austria	0	3	4	6	7	8	6	0	2	2	2	1	1	2	0	2	3	4	4	5	4
Azerbaijan	0	0	0					0		0					0	0	0				
Belarus	0							0							0						
Belgium	1	5	6	6	6	4	7	1	2	3	3	2	1	2	1	4	4	4	4	3	4
Bosnia & Herzegovina	2	12	22	31	31	31	57	2	15	16	10	6	25	52	2	14	19	20	19	28	54
Bulgaria	0	3	3	4	4	4	2	0	2	3	2	1	0	1	0	2	3	3	2	2	2
Croatia	0	5	10	26	20	17	13	0	5	6	8	6	5	11	0	5	8	17	13	11	12
Czech Republic	0	2	5	7	11	8	9	0	1	2	1	1	1	6	0	2	4	4	6	5	7
Denmark	0	3	4	5	4	1	3	1	2	3	3	2	2	1	1	3	3	4	3	1	2
Estonia	0	10	25	44	43	37	21	0	6	11	17	11	7	6	0	8	18	30	26	20	11
Finland	0	0	3	3	4	5	14	0	1	1	1	2	3	5	0	1	2	2	3	4	8
France	0	3	5	6	5	4	5	0	3	3	2	1	1	3	0	3	4	4	3	3	4
Georgia	1	34	61	51	40	21	17	0	16	17	9	7	7	5	1	25	40	29	22	13	10
Germany	0	0	2	2	2	2	2	0	1	1	1	1	0	1	0	0	1	1	1	1	1
Greece	0	1	3	4	3	3	4	0	1	1	1	1	1	3	0	1	2	2	2	2	3
Hungary	0	2	5	15	19	15	8	0	1	2	5	3	2	4	0	1	4	10	11	8	5
Iceland	0	5					7	0			5				0	2		2			3
Ireland	0	2	4	5	3	4	4	0	1	2	1	0	1	2	0	1	3	3	2	2	3
Israel	0	1	6	5	5	5	17	0	1	3	2	1	1	5	0	1	4	3	3	3	10
Italy	0	1	3	2	2	2	2	0	1	2	1	1	1	0	1	0	2	2	1	1	1
Kazakhstan	2	69	121	122	119	89	55	4	70	90	45	28	32	23	3	70	106	83	71	57	34
Kyrgyzstan	0	36	76	68	80	50	38	0	27	49	31	21	24	25	0	32	63	49	49	36	30
Latvia	0	27	63	78	70	53	29	1	14	20	22	19	11	8	1	20	42	50	43	29	14
Lithuania	0	13	40	69	76	52	44	0	12	22	20	15	13	18	0	13	31	44	43	30	27
Luxembourg	0	0	3	0	0	0	8	0	8	6	3	3	4	5	0	4	5	1	2	2	6
Malta	0				3		5	0			4				0	0		2			2
Monaco																					
Netherlands	0	5	4	2	2	1	3	0	3	3	1	1	1	1	0	4	3	2	2	1	2
Norway	0	2	2	2	1	0	3	0	2	3	0	0	1	1	0	2	3	1	1	1	2
Poland	0	2	9	21	23	18	18	0	3	6	6	4	3	12	0	3	7	14	14	10	14
Portugal	1	22	41	51	35	22	22	2	16	20	11	5	5	7	1	19	30	31	20	13	13
Republic of Moldova	0	39	67	74	61	41	21	1	15	20	14	11	7	4	1	27	44	42	34	22	10
Romania	3	43	89	134	137	93	54	4	41	45	35	26	19	20	3	42	67	84	80	53	34
Russian Federation	0	18	43	51	54	35	16	0	9	13	11	9	6	5	0	14	28	31	31	18	8
San Marino																					
Slovakia	0	2	3	8	13	12	9	0	1	2	3	2	2	11	0	1	3	5	7	6	10
Slovenia	0	3	7	19	18	11	7	0	4	8	7	2	5	8	0	3	8	13	10	7	7
Spain	0	6	11	12	9	7	8	1	5	7	4	1	1	2	0	5	9	8	5	4	5
Sweden	0	2	2	1	0	0	4	0	1	2	1	0	0	2	0	1	2	1	0	0	3
Switzerland	0	2	4	2	1	2	1	0	1	2	1	1	0	1	0	2	3	1	1	1	1
Tajikistan	1	21	34	25	23	15	13	0	10	18	17	13	10	5	0	15	26	21	18	12	8
TFYR Macedonia	0	6	11	11	12	23	17	0	10	12	10	5	3	6	0	8	11	10	9	13	11
Turkey																					
Turkmenistan	0	35	80	66	55	52	25	0	24	38	22	22	33	21	0	30	59	43	38	42	23
Ukraine	0	20	50	75	80	44	24	0	15	19	14	10	7	9	0	18	35	44	43	23	14
United Kingdom	0	3	3	2	2	3	3	0	2	3	1	1	1	2	0	2	3	2	2	2	2
Uzbekistan	0	15	47	33	45	51	27	0	13	32	20	29	41	25	0	14	40	26	36	46	26
Yugoslavia	0	6	6	6	5	6	3	1	6	6	3	3	4	2	0	6	6	5	4	5	3
Regional rate	0	11	21	25	26	16	10	1	8	10	6	4	4	5	0	9	16	16	16	10	7

Rates are missing where data for smear-positive cases are missing, or where age- and sex-specific population data are not available.

Country data for Europe, cont'd: number of TB cases notified, 1980-2001

Country/territory	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	
Albania	1 050	954	978	891	975	916	989	915	759	695	653	628	628	21	15	707	641	738	655	694	733	604	555
Andorra																							
Armenia	756	924	759	702	774	768	832	766	651	649	590	741	235	590	753	1 157	928	1 026	1 455	1 488	1 333	1 389	
Austria	2 191	2 061	1 942	1 825	1 765	1 442	1 377	1 390	1 402	1 334	1 521	1 426	1 354	1 267	1 264	1 399	1 375	1 369	1 307	1 085	1 185	1 013	
Azerbaijan	3 080	3 180	3 217	3 176	3 066	3 772	3 804	3 677	3 340	2 989	2 820	2 771	2 821	3 036	2 839	1 630	2 480	4 635	4 672	4 654	5 187	4 898	
Belarus	5 954	6 198	5 468	5 509	5 065	4 873	4 128	3 911	3 769	3 708	3 039	3 745	2 414	4 134	4 348	4 854	5 598	5 985	6 150	7 339	6 799	5 505	
Belgium	2 687	2 637	2 652	2 190	2 149	1 956	1 893	1 772	1 598	1 648	1 577	1 462	1 335	1 503	1 521	1 380	1 348	1 263	1 203	1 124	1 278	1 321	
Bosnia & Herzegovina	4 421	4 376	4 678	4 468	4 691	4 666	4 605	4 522	4 093	4 176	4 073	3 546	600	680	1 595	2 132	2 220	2 869	2 711	2 923	2 476	2 469	
Bulgaria	3 280	3 007	2 999	2 892	2 856	2 555	2 530	2 352	2 387	2 301	2 256	2 206	3 086	3 213	5 296	3 245	3 109	3 437	4 117	3 530	3 349	3 862	
Croatia	3 999	4 021	3 718	3 632	3 612	3 605	3 355	3 326	2 973	2 861	2 576	2 158	2 189	2 279	2 217	2 114	2 174	2 054	2 118	1 765	1 630	1 376	
Czech Republic	4 962	4 312	4 146	4 016	3 653	3 117	2 553	2 196	2 047	1 905	1 937	2 079	1 986	1 864	1 960	1 834	1 969	1 834	1 805	1 605	1 414	1 291	
Denmark	430	394	378	348	302	312	299	322	304	328	350	334	359	411	495	448	484	554	529	587	587	494	
Estonia	614	560	563	587	546	541	522	446	471	422	332	406	403	532	645	624	521	744	820	732	758	678	
Finland	2 247	2 204	2 170	1 882	1 791	1 819	1 546	1 419	1 078	970	772	771	700	542	553	661	645	573	629	565	527	460	
France	17 199	16 459	15 425	13 831	12 302	11 290	10 535	10 241	9 191	9 027	9 030	8 510	8 605	9 551	9 093	8 723	7 656	6 832	6 052	6 122	5 814		
Georgia	2 098	2 124	2 168	1 881	1 855	1 822	1 833	1 810	1 598	1 609	1 537	1 537	2 130	3 741	1 625	3 522	3 522	8 446	6 302	4 793	4 397	4 006	
Germany	29 991	27 083	25 397	22 977	20 243	20 074	17 906	17 102	16 282	15 385	14 653	13 474	14 113	12 982	12 198	11 814	11 163	10 440	9 974	9 064	6 959		
Greece	5 412	7 334	5 193	3 880	1 956	1 556	1 193	1 068	907	1 068	877	762	920					767	1 152	936	703	503	
Hungary	5 412	5 322	5 181	5 028	4 472	4 852	4 522	4 125	4 016	3 769	3 588	3 658	3 960	4 209	4 163	4 339	4 403	4 240	3 999	3 532	3 073	2 923	
Iceland	25	23	25	24	26	13	13	12	16	18	18	15	16	11	18	12	11	10	17	10	13	12	
Ireland	1 152	1 018	975	924	837	804	602	581	534	672	624	640	604	598	544		434	416	424	455	386	393	
Israel	249	227	232	222	257	368	239	184	226	160	234	505	345	419	395	398	369	422	656	490	557	546	
Italy	3 311	3 182	3 850	4 253	3 472	4 113	4 077	3 278	3 610	3 996	4 246	3 719	4 685	4 734	5 816	5 627	4 155	4 596	5 727	4 429	3 501	4 287	
Kazakhstan	14 442	13 876	13 808	13 357	12 563	12 423	13 990	13 286	13 501	13 307	10 969	10 821	10 920	10 425	10 519	11 310	13 944	16 109	20 623	24 979	25 843	26 224	
Kyrgyzstan	1 973	2 085	2 051	1 981	2 022	2 094	2 122	2 088	2 159	2 132	2 306	2 515	2 582	2 427	2 726	3 393	4 093	5 189	5 706	6 376	6 205	6 654	
Latvia	1 194	1 140	1 077	1 072	1 054	1 223	982	948	938	857	906	943	955	994	1 131	1 541	1 761	2 003	2 182	1 891	1 982	2 000	
Lithuania	1 636	1 599	1 495	1 477	1 420	1 453	1 412	1 372	1 339	1 381	1 471	1 556	1 598	1 895	1 985	2 135	2 362	2 926	3 016	2 800	2 657	2 598	
Luxembourg	71	45	41	41	46	42	45	48	16	45	48	48	25	35	33	33	41	38	44	37	44	31	
Malta	24	26	13	24	15	11	14	14	12	16	13	26	30	26	25	11	28	11	16	22	16	16	
Monaco	1	0	0	0	0	1	2	2	1	1	1	0	1	1	1	0	0	0	0	3	0	0	
Netherlands	1 701	1 734	1 514	1 423	1 400	1 362	1 238	1 227	1 341	1 317	1 369	1 345	1 465	1 587	1 811	1 619	1 678	1 486	1 341	1 398	1 244	1 408	
Norway	499	461	448	396	373	374	343	307	294	255	285	290	288	256	242	236	217	205	244	213	221	276	
Poland	25 807	24 087	23 685	23 411	22 527	21 650	20 603	19 757	18 537	16 185	16 136	16 496	16 551	16 828	16 653	15 958	15 358	13 967	13 302	12 168	10 931	10 153	
Portugal	6 873	7 249	7 309	7 052	6 908	6 889	6 624	7 099	6 363	6 664	6 214	5 980	5 927	5 447	5 619	5 577	5 248	5 110	5 260	4 599	4 227	4 093	
Republic of Moldova	2 781	2 852	3 197	2 858	2 554	2 732	3 022	2 810	2 510	2 281	1 728	1 910	1 835	2 426	2 626	2 925	2 922	2 908	2 625	2 711	2 935	3 608	
Romania	13 553	13 602	13 988	13 570	12 952	12 677	12 860	13 361	14 137	14 676	16 256	15 482	18 097	20 349	21 422	23 271	24 189	23 903	25 758	26 107	27 470	28 590	
Russian Federation	74 270	73 369	72 236	73 280	74 597	64 644	71 764	70 132	67 553	62 987	50 641	50 407	53 148	63 591	70 822	84 980	111 075	119 123	110 935	134 360	140 677	132 477	
San Marino											1	1	1	3	2		0	1	0	0	1	0	
Slovakia	2 465	2 304	2 263	2 252	2 152	1 989	2 022	1 830	1 651	1 501	1 448	1 620	1 733	1 799	1 760	1 540	1 503	1 298	1 282	1 100	1 010	986	
Slovenia	1 085	939	982	925	896	923	816	792	760	768	722	583	640	646	526	525	563	481	449	423	368	359	
Spain	4 853	5 552	7 961	8 987	10 078	10 749	13 755	9 468	8 497	8 058	7 600	9 007	9 703	9 441	8 764	8 331	9 347	8 927	8 393	7 993	6 851		
Sweden	926	875	784	832	754	702	640	545	536	595	557	521	610	616	537	564	497	456	446	479	417	394	
Switzerland	1 160	1 193	1 167	1 097	946	961	881	1 018	1 201	1 104	1 278	1 134	987	930	924	830	765	747	750	756	544	539	
Tajikistan	2 647	2 631	2 628	2 509	2 427	2 485	2 610	2 727	2 474	2 621	2 460	2 116	1 671	652	892	2 029	1 647	2 143	2 448	0	2 779	3 508	
TFYR Macedonia													1 602	1 712	728	786	724	693	620	557	641	648	
Turkey	36 716	39 992	26 457	28 634	27 589	30 960	31 029	30 531	27 884	26 669	24 468	25 166	25 455			22 981	20 212	25 685	25 501	22 088	18 038	17 263	
Turkmenistan	1 677	1 625	1 559	1 541	1 604	1 607	1 614	1 956	1 904	2 169	2 325	2 358	2 074	2 751		1 939	2 072	3 438	3 839	4 092	4 038	3 948	
Ukraine	26 095	25 646	24 710	24 216	24 356	24 058	22 946	22 145	20 744	20 182	16 465	16 713	18 140	19 964	20 622	21 459	23 414	28 344	27 763	32 879	32 945	36 784	
United Kingdom	10 488	9 290	8 436	7 814	7 026	6 666	6 841	5 732	5 793	6 059	5 908	6 088	6 411	6 481	6 196	6 176	6 238	6 355	6 176	6 183	6 220	6 027	
Uzbekistan	9 163	9 892	8 697	8 817	8 544	8 717	9 427	9 794	10 134	10 632	9 414	9 370	9 774	9 774	14 890	9 866	11 919	13 352	14 558	15 080	15 750	17 391	
Yugoslavia	6 2323</																						

Country data for Europe, cont'd: case notification rates, 1980-2001

Country/territory	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Albania	39	35	35	31	34	31	33	29	24	21	20	19	36	24	22	20	23	21	22	23	19	18
Andorra																						
Armenia	24	29	24	22	23	23	25	22	19	19	17	21	6	16	20	31	25	27	38	39	35	37
Austria	29	27	26	24	23	19	18	18	18	17	20	18	17	16	16	17	17	17	16	13	15	13
Azerbaijan	50	51	51	49	53	57	56	54	48	42	37	38	38	41	37	21	32	59	59	58	65	60
Belarus	62	64	56	56	51	49	41	39	37	36	30	36	23	40	42	47	54	58	60	72	67	54
Belgium	27	29	27	22	22	20	19	18	16	17	16	15	13	15	15	14	13	12	12	11	12	13
Bosnia & Herzegovina	113	111	117	111	115	113	110	106	94	96	95	85	15	18	45	62	65	81	74	76	62	61
Bulgaria	37	34	34	32	32	29	28	26	27	26	26	30	36	38	62	39	37	42	51	44	42	49
Croatia	91	91	84	82	81	81	75	74	66	64	57	48	48	50	48	46	47	44	46	38	35	30
Czech Republic	48	42	40	39	35	30	25	21	20	18	19	20	19	18	19	18	19	18	16	14	13	13
Denmark	8	8	7	7	6	6	6	6	6	6	7	6	7	8	10	9	9	11	10	11	11	9
Estonia	42	38	38	39	36	36	36	34	29	30	27	26	26	35	43	42	36	51	57	52	54	49
Finland	47	46	45	39	37	37	31	29	22	20	15	15	14	11	11	13	13	11	12	11	10	9
France	32	30	28	25	22	20	19	18	16	16	16	15	15	17	16	15	13	12	12	10	10	10
Georgia	41	42	42	36	35	34	34	34	29	30	28	39	69	69	66	30	66	159	119	91	84	76
Germany	38	35	33	30	26	26	23	22	21	19	18	17	18	18	16	15	14	14	13	12	11	8
Greece	56	75	53	39	20	16	16	12	9	11	9	7	9					7	11	9	7	5
Hungary	51	50	48	47	42	46	43	39	38	36	35	35	38	41	41	42	43	42	40	35	31	29
Iceland	11	10	11	10	11	5	5	5	6	7	7	6	6	4	7	4	4	4	6	4	5	4
Ireland	34	30	28	26	24	23	17	16	15	19	18	18	17	17	15	12	12	11	11	12	10	10
Israel	7	6	6	6	6	9	6	4	5	4	5	11	7	8	8	7	7	7	11	8	9	9
Italy	6	6	7	8	6	7	7	6	6	7	7	7	7	8	10	10	10	7	8	10	8	6
Kazakhstan	97	92	90	87	80	78	82	82	82	80	66	64	65	62	63	68	84	98	126	154	160	163
Kyrgyzstan	54	56	54	51	51	52	52	50	51	49	52	57	58	54	60	74	89	111	120	132	126	133
Latvia	48	45	43	42	41	47	38	36	35	32	34	36	36	38	44	61	71	81	89	78	82	83
Lithuania	48	47	43	42	40	41	39	38	37	37	40	42	43	51	57	64	70	79	81	76	72	70
Luxembourg	20	12	11	11	13	11	12	13	4	12	13	12	6	9	8	10	10	9	10	9	10	7
Malta	7	8	4	7	4	3	4	4	3	4	4	7	8	7	7	3	7	3	4	6	4	4
Monaco	4	0	0	0	0	4	7	7	3	3	3	0	3		3	0	0	0	0	9	0	0
Netherlands	12	12	11	10	10	9	8	8	9	9	9	9	10	10	12	10	11	10	9	9	8	9
Norway	12	11	11	10	9	9	8	7	7	6	7	7	7	6	6	5	5	5	6	5	5	6
Poland	73	67	65	64	61	58	55	52	49	43	42	43	43	44	43	41	40	36	34	32	28	26
Portugal	70	74	74	71	69	69	66	71	64	67	63	60	60	55	57	56	53	51	53	46	42	41
Republic of Moldova	69	70	78	69	61	65	71	66	58	52	40	44	42	56	60	67	67	67	61	63	68	84
Romania	61	61	61	60	57	56	56	58	61	63	70	67	78	89	94	103	107	106	114	116	122	128
Russian Federation	54	53	51	52	52	45	50	48	46	43	34	34	36	43	48	57	75	81	76	92	97	92
San Marino											4	4		12	8	0	0	4	0	0	4	0
Slovakia	50	46	45	44	42	39	39	35	32	29	28	31	33	34	33	29	28	24	24	20	19	18
Slovenia	59	51	53	50	48	49	43	42	40	40	38	30	33	33	27	26	28	24	23	21	19	18
Spain	13	15	21	24	26	28	36	24	22	21	19	23	25	24	22	22	21	23	22	21	20	17
Sweden	11	11	9	10	9	8	8	6	6	7	7	6	7	7	6	6	6	5	5	5	5	4
Switzerland	18	19	18	17	15	15	13	15	18	16	19	16	14	13	13	12	11	10	10	11	8	8
Tajikistan	67	65	63	58	55	54	55	56	49	51	46	39	30	12	16	35	28	36	41	0	46	57
TFYR Macedonia													83	88	37	40	37	35	31	28	32	32
Turkey	82	87	56	60	56	61	60	58	52	49	44	44	44			37	32	40	39	34	27	26
Turkmenistan	59	55	52	50	51	50	49	58	55	61	63	63	53	69		46	48	78	85	88	85	82
Ukraine	52	51	49	48	48	47	45	43	40	39	32	32	35	38	40	42	46	56	55	66	66	75
United Kingdom	19	16	15	14	12	12	12	10	10	11	10	11	11	11	11	11	11	11	11	10	10	10
Uzbekistan	57	59	52	51	48	48	51	51	52	53	46	44	44	45	67	43	51	56	60	62	63	69
Yugoslavia	65	66	65	66	66	63	62	61	56	50	41	44	37	37	34	27	38	38	29	25	27	43
Regional rate	47	49	55	57	48	43	46	44	42	42	44	50	27	46	40	46	50	49	55	59	55	54

Country data for Europe, cont'd: new smear-positive cases, 1993-2001

Country/territory	Number of cases										Rate (per 100 000 population)									
	1993	1994	1995	1996	1997	1998	1999	2000	2001		1993	1994	1995	1996	1997	1998	1999	2000	2001	
Albania		250	139	173	241	212	168	171	171			8	4	5	8	7	5	5	5	
Andorra	15	24	8	8	17	98	4	1	3		24	37	11	23	125	5	1	3	3	
Armenia		319	436	327	400	475	576	621	572			9	12	9	11	13	15	16	15	
Austria		662	580	370	370	323	323	324	262				8	7	5		4	4	3	
Azerbaijan	499	513	669	990	981	727	763	890	927		7	7	9	13	13	9	10	11	11	
Belarus	1 493	1 775	1 845	2 117	2 273	5 047	2 769	2 547	2 341		14	17	18	21	22	49	27	25	23	
Belgium	484	427	400	364	434	418	403	409	472		5	4	4	4	4	4	4	4	5	
Bosnia & Herzegovina		865	927	803	640	786	766	759	800				25	27	23	17	20	19	20	
Bulgaria		3 096	1 087	903	1 037	1 325	1 697	2 524	897			37	13	11	13	16	21	32	11	
Croatia		1 204	1 228	1 073	1 129	748	0	421			5	5	26	26	23	24	16	0	9	
Czech Republic	548	524	487	586	481	545	449	420	391		5	5	5	6	5	5	4	4	4	
Denmark	243	120	128	97	114	132	172	171	127		5	2	2	2	2	3	3	3	2	
Estonia	303	347	369	240	269	299	274	255	212		20	23	25	16	19	21	19	18	15	
Finland		244	240	186	188	179	205	150			5	5	5	4	4	4	3	4	3	
France	4 455	3 196	3 449	3 002	2 430	2 325	1 815	2 398			8	6	6	5	4	4	4	3	4	
Georgia		221	482	595	547	746	601	1 014					4	9	11	10	14	11	19	
Germany	4 730	4 177	3 852	3 689	3 346	3 124	2 918	0	1 935		6	5	5	5	4	4	4	0	2	
Greece		285	313	143	235	213									3	3	1	2	2	
Hungary	1 905	1 357	796	1 066	702	667	660	412	546		19	13	8	10	7	7	7	4	6	
Iceland		6	2	1	4	2	2	1	3			2	1	0	1	1	1	0	1	
Ireland			339	123	116	117	138	123						9	3	3	3	4	3	
Israel	150	129	147	207	221	170	170	17	172		3	2	3	3	4	4	3	0	3	
Italy		1 441	1 413	1 738	1 903	2 361	1 277	687	1 361			3	2	3	3	4	2	1	2	
Kazakhstan		3 022	4 290	4 332	6 180	6 977	8 903	9 079					18	26	26	38	43	55	56	
Kyrgyzstan		681	832	991	1 536	830	1 642	1 296	0			15	18	21	33	17	34	26	0	
Latvia	470	504	575	634	668	588	637	661			18	20	20	23	26	27	24	26	27	
Lithuania	688	979	1 121	1 200	787	787	776	935			18	26	30	32	32	21	21	21	25	
Luxembourg			29	31	24			21	11					7	7	6		5	2	
Malta	13	6	5	5	3	6	9	5	3		4	2	1	1	1	2	2	1	1	
Monaco			0	0	0	0	2	0	0					0	0	0	6	0	0	
Netherlands	1 063		575	358	312	254	308	289	307		7		4	2	2	2	2	2	2	
Norway		86	62	103	100	49	21	37	59			2	1	2	2	1	0	1	1	
Poland	7 606	4 000	6 955	6 819	3 497	3 502	3 177	3 180	3 155		20	10	18	18	9	9	8	8	8	
Portugal		2 072	2 019	1 938	1 628	2 016	1 801	1 863	1 815			21	20	20	16	20	18	19	18	
Republic of Moldova	615	704	665	219	397	477	609	651	1 060		14	16	15	5	9	11	14	15	25	
Romania	9 339	10 385	10 469	10 359	11 686	10 841	10 317	10 202	11 184		41	46	46	46	52	48	46	45	50	
Russian Federation		30 389	37 512	42 534	42 094	42 219	21 744	27 467	26 605			20	25	29	29	29	15	19	18	
San Marino			0	1	0	0	0	1	0					0	4	0	0	4	0	
Slovakia	882	409	788	760	283	303	246	236	226		17	8	15	14	5	6	5	4	4	
Slovenia	361	294	303	221	156	157	165	145	139		18	15	15	11	8	8	8	7	7	
Spain		2 605			1 906		3 423	2 456					7			5	9	6	6	
Sweden	312	106	102	90	94	97	117	118	105		4	1	1	1	1	1	1	1	1	
Switzerland	528	507	185	172	144	165	98	118	116		8	7	3	2	2	2	1	2	2	
Tajikistan			1 042	232	373	435	0	434	719				18	4	6	7	0	7	12	
TFYR Macedonia			319	209	192	179	122	167	164				16	11	10	9	6	8	8	
Turkey			4 383	2 816	3 439	3 692	4 124	4 315	4 444				7	5	5	6	6	6	7	
Turkmenistan	472		544	557	764	790	964	1 017	1 243		12		13	13	17	17	21	21	26	
Ukraine	8 314	8 471	8 263	7 827	9 533	10 586	10 412	10 738	0		16	16	16	15	19	21	21	22	0	
United Kingdom	283	270	4 147	844	1 342	797	1 204	946			0	0		7	1	2	1	2	2	
Uzbekistan		7 487	2 735	3 350	3 388	3 504	3 977	3 825	4 608			34	12	14	14	15	16	15	18	
Yugoslavia			1 497	1 783	1 702	1 873	2 517	0	461				14	17	16	18	24	0	4	
Total	45 771	83 568	104 633	110 749	106 617	111 468	89 190	94 271	86 012		5	10	12	13	12	13	10	11	10	

Notes

ISRAEL Of 320 culture-positive cases registered for treatment in 2000, 67% were cured, 10% completed treatment (success rate of 78%), 11% died, 1% failed, 3% defaulted, 7% transferred, and 1% were not evaluated.

RUSSIAN FEDERATION

Among 8 886 new smear-negative cases, 367 were laboratory-confirmed (culture-positive).

UNITED KINGDOM Notification data do not include 365 cases in Scotland, for which there was no information about site or treatment history.

South-East Asia

South-East Asia: Summary of TB control policies

COUNTRY	MICROSCOPY (A)	SCC (B)	DOT (C)	OUTCOME MONITORING (D)	CATEGORY AS OF 31/12/01*	DOTS NEWLY IMPLEMENTED IN 2001
BANGLADESH					4	
BHUTAN					4	
DPR KOREA					3	
INDIA					3	
INDONESIA					4	
MALDIVES					4	
MYANMAR					3	
NEPAL					3	
SRI LANKA					3	
THAILAND					3	

Microscopy (a) Use of smear microscopy for diagnosis
 SCC (b) Short course chemotherapy
 DOT (c) Directly observed therapy
 Outcome monitoring (d) Monitoring of treatment outcomes by cohort analysis
 * See table 1 for definition of categories

	implemented in all units/areas
	implemented in some units/areas
	not implemented
	unknown

Note: responses refer to DOTS units/areas if the country is classified as having implemented DOTS.

Country data for South-East Asia: notification, detection and DOTS coverage, 2001

Country/Territory	Country information																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
	Notified TB					Estimated TB					DOTS					DOTS					DOTS					non-DOTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	All cases		New ss+		rate	New confirmed*		New ss+		Detection rate		g	h	pop	% of cate-	Notifications			New ss+			j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a	rate	j/a

* these data are not required by WHO, but are provided by some countries, particularly those in the European Region

Country data for South-East Asia, cont'd: treatment outcomes for cases registered in 2000 - WHO TB control strategy DOTS and non-DOTS

[illegible]

Country data for South-East Asia, cont'd: age and sex distribution of smear-positive cases in DOTS areas, 2001 (absolute numbers)

	MALE							FEMALE							ALL						
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+
Bangladesh	265	3 745	5 527	6 006	4 943	3 512	2 906	397	3 199	3 337	2 159	1 414	725	339	662	6 944	8 864	8 165	6 357	4 237	3 245
Bhutan	3	48	50	24	27	9	12	5	59	44	18	8	8	6	8	107	94	42	35	17	18
DPR Korea	121	812	1 198	1 395	1 472	805	412	100	473	791	749	653	373	232	221	1 285	1 989	2 144	2 125	1 178	644
India	1 063	22 483	30 007	29 649	23 961	14 879	7 779	2 125	15 973	16 743	10 103	5 633	3 353	1 526	3 188	38 456	46 750	39 752	29 594	18 232	9 305
Indonesia	298	5 400	7 279	6 241	5 538	4 076	1 914	354	5 213	6 040	4 849	3 537	2 381	845	652	10 613	13 319	11 090	9 075	6 457	2 759
Maldives	1	12	5	3	5	7	1	1	10	3	2	6	1	2	2	22	8	5	11	8	3
Myanmar	69	1 800	3 253	3 353	2 624	1 443	931	98	1 306	1 918	1 568	1 186	650	487	167	3 106	5 171	4 921	3 810	2 093	1 418
Nepal	155	1 957	1 709	1 743	1 491	1 300	775	171	1 295	1 060	838	573	375	222	326	3 252	2 769	2 581	2 064	1 675	997
Sri Lanka	5	257	392	639	673	446	267	16	258	209	168	137	121	112	21	515	601	807	810	567	379
Thailand	37	1 868	5 192	4 516	3 269	2 617	2 912	58	999	1 550	1 231	1 251	1 265	1 777	95	2 867	6 742	5 747	4 520	3 882	4 689
Regional total	2 017	38 382	54 612	53 569	44 003	29 094	17 909	3 325	28 785	31 695	21 685	14 398	9 252	5 548	5 342	67 167	86 307	75 254	58 401	38 346	23 457

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for South-East Asia, cont'd: age and sex distribution of smear-positive cases in non-DOTS areas, 2001 (absolute numbers)

	MALE							FEMALE							ALL						
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+
Bangladesh	18	231	307	251	229	170	133	31	193	201	101	78	38	32	49	424	508	352	307	208	165
Bhutan																					
DPR Korea	86	269	395	881	736	344	194	23	217	341	605	467	180	104	109	486	736	1 486	1 203	524	298
India																					
Indonesia																					
Maldives																					
Myanmar																					
Nepal																					
Sri Lanka	1	27	54	74	106	82	69	2	38	38	26	37	35	19	3	65	92	100	143	117	88
Thailand																					
Regional total	105	527	756	1 206	1 071	596	396	56	448	580	732	582	253	155	161	975	1 336	1 938	1 653	849	551

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for South-East Asia, cont'd: smear-positive notification rates by age and sex, 2001

	MALE							FEMALE							ALL						
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+
Bangladesh	1	27	51	75	101	127	137	2	24	33	30	32	26	17	1	26	43	53	68	76	77
Bhutan	1	22	36	24	38	17	28	1	28	33	19	11	15	12	1	25	34	21	24	16	20
DPR Korea	7	62	75	134	205	113	104	4	41	56	83	105	51	43	6	52	65	109	156	80	69
India	1	22	35	44	51	50	32	1	17	22	17	13	11	6	1	20	29	31	33	30	18
Indonesia	1	25	39	44	60	66	40	1	25	33	35	38	35	14	1	25	36	40	49	50	26
Maldives	2	38	24	20	56	117	18	2	33	16	15	65	20	40	2	35	20	18	60	72	29
Myanmar	1	37	81	115	127	118	91	1	27	47	53	54	49	40	1	32	64	84	90	82	64
Nepal	3	83	101	145	177	222	181	4	59	65	71	69	65	49	3	72	83	108	124	144	113
Sri Lanka	0	15	28	49	71	75	55	1	16	16	14	18	25	22	0	16	23	32	47	51	38
Thailand	0	32	91	94	103	136	192	1	17	27	25	38	62	93	1	25	58	59	70	98	137
Regional rate	1	25	43	54	65	67	51	2	18	25	24	24	21	16	1	23	35	39	44	43	32

Rates are missing where data for smear-positive cases are missing, or where age- and sex-specific population data are not available.

Country data for South-East Asia, cont'd: number of TB cases notified, 1980-2001

Country/territory	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Bangladesh	39 774	42 644	49 870	52 961	45 679	41 802	45 599	45 355	44 280	45 191	48 673	56 052	31 400	54 001	48 276	56 437	63 471	63 420	72 256	79 339	75 557	76 302
Bhutan	1 539	2 657	720	1 017	904	1 073	1 582	608	1 126	1 525	1 154	996	140	108	1 159	1 299	1 271	1 211	1 292	1 174	1 140	999
DPR Korea																		11 050	1 152	12 287	34 131	30 026
India	705 600	769 540	923 095	1 075 098	1 109 310	1 168 804	1 279 536	1 403 122	1 457 288	1 510 500	1 519 182	1 555 353	1 121 120	1 081 279	1 114 374	1 218 183	1 290 343	1 132 859	1 102 002	1 218 743	1 115 718	1 085 075
Indonesia	25 235	32 461	33 000	31 809	32 432	17 681	16 750		97 505	105 516	74 470	60 808	98 458	62 966	49 647	35 529	24 647	22 184	40 497	69 064	84 591	92 792
Maldives	73	112	111	143	123	91	111	115	85	203	152	123	92	175	249	231	212	173	175	153	132	139
Myanmar	12 744	12 461	12 069	11 012	11 045	10 506	10 840	11 986	9 348	10 940	12 416	14 905	17 000	19 009	15 583	18 229	22 201	17 122	14 756	19 626	30 840	42 838
Nepal	1 020	337	1 459	700	190	52	252	1 012	1 603	11 003	10 142	8 983		13 161	15 572	19 804	22 970	24 158	24 135	27 356	29 519	29 519
Sri Lanka	6 212	6 288	7 334	6 666	6 376	5 889	6 596	6 411	6 092	6 429	6 666	6 174	6 802	6 809	6 132	5 710	5 366	6 542	6 925	7 157	8 413	7 499
Thailand	45 704	49 452	48 553	65 413	69 240	77 611	52 152	51 835	50 021	44 553	46 510	43 858	47 697	49 668	47 767	45 428	39 871	30 262	15 850	29 413	34 187	49 656
Total	837 901	915 952	1 076 211	1 244 819	1 275 299	1 323 509	1 413 418	1 520 444	1 667 348	1 735 860	1 719 365	1 747 252	1 322 709	1 287 176	1 298 759	1 400 850	1 470 352	1 308 981	1 279 040	1 464 312	1 414 228	1 414 845
number reporting	9	9	9	9	9	9	9	8	10	9	9	9	8	9	9	9	9	10	10	10	10	10
percent reporting	90	90	90	90	90	90	90	80	100	90	90	90	80	90	90	90	90	100	100	100	100	100

Country data for South-East Asia, cont'd: case notification rates, 1980-2001

Country/territory	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Bangladesh	47	49	55	57	48	43	46	44	42	42	44	50	27	46	40	46	50	49	55	59	55	54
Bhutan	117	197	52	72	62	72	104	39	70	92	68	58	8	6	64	71	68	63	65	58	55	47
DPR Korea									0									51	5	56	153	134
India	102	109	129	147	148	153	164	176	179	182	180	181	128	121	122	131	137	118	113	123	111	106
Indonesia	17	21	21	20	20	11	10		55	59	41	33	52	33	26	18	12	11	20	33	40	43
Maldives	46	69	66	83	69	50	59	59	42	97	70	55	40	74	102	92	82	65	64	54	45	46
Myanmar	38	36	34	31	30	28	29	31	24	27	31	36	40	44	36	41	49	37	32	42	65	89
Nepal	7	2	10	5	1	0	2	6	9	62	56	48		68	78	97	110	113	110	122	128	125
Sri Lanka	43	42	49	44	41	37	41	39	37	38	39	36	39	39	34	32	29	36	37	38	44	39
Thailand	99	105	101	134	139	154	101	99	94	83	85	79	85	87	82	77	67	50	26	47	54	78
Regional rate	80	85	98	111	111	113	119	125	134	137	133	133	99	94	94	99	102	90	86	97	92	91

Country data for South-East Asia, cont'd: new smear-positive cases, 1993-2001

Country/territory	Number of cases										Rate (per 100 000 population)									
	1993	1994	1995	1996	1997	1998	1999	2000	2001		1993	1994	1995	1996	1997	1998	1999	2000	2001	
Bangladesh	18 993	17 10	20 524	29 674	33 117	37 737	37 821	38 484	40 777		16	1	17	23	26	29	28	28	29	
Bhutan		352	367	308	284	270	315	347	321			20	20	16	15	14	16	17	15	
DPR Korea					3 980	403	5 073	16 440	14 429						18	2	23	74	64	
India	225 256	226 543	264 515	290 953	274 877	278 275	345 150	349 374	384 827		25	25	29	31	29	29	35	35	38	
Indonesia	62 966	49 647	31 768	11 790	19 492	32 280	49 172	52 338	53 965		33	26	16	6	10	16	23	25	25	
Maldives	126	125	114	106	95	88	88	65	59		53	51	46	41	36	32	31	22	20	
Myanmar			8 681	9 716	9 695	10 089	11 458	17 254	21 161				20	22	21	22	24	36	44	
Nepal	6 679	10 442	8 591	10 365	11 323	11 306	13 410	13 683	13 683		34	52	42	50	53	51	60	59	58	
Sri Lanka	3 335	3 405	3 049	2 958	3 506	3 761	3 911	4 314	4 316		19	19	17	16	19	20	21	23	23	
Thailand		20 260	20 273	16 997	13 214	7 962	14 934	17 754	28 363			35	35	29	22	13	24	28	45	
Total	317 355	312 484	357 882	372 867	369 583	382 171	481 332	510 053	561 901		23	23	25	26	25	26	32	33	36	

Notes

BANGLADESH Data are not routinely collected from district hospitals, medical college hospitals, prisons, military, police, and railways.

DPR KOREA Data are not routinely collected from prisons and the military.

INDIA Data are not routinely collected from prisons and the military.

INDONESIA An active data collection exercise, conducted in mid 2002, increased the number of reports received and affected both the number of notifications (all forms) and the treatment success rate.

MYANMAR Data are not routinely collected from prisons and the social security system.

THAILAND Notifications from Bangkok (2 440 cases, all new smear-positive), and from prisons (3 150 cases, all new smear-positive) were included for first time this year. The treatment success rate for the 2000 cohort was 75% for Bangkok, and 77% for prisons.

The Western Pacific

Western Pacific: Summary of TB control policies

COUNTRY	MICROSCOPY (A)	SCC (B)	DOT (C)	OUTCOME MONITORING (D)	CATEGORY AS OF 31/12/01*	DOTS NEWLY IMPLEMENTED IN 2001
AMERICAN SAMOA					1	
AUSTRALIA					3	
BRUNEI DARUSSALAM					4	
CAMBODIA					4	
CHINA					3	
CHINA, HONG KONG SAR					4	
CHINA, MACAO SAR					4	
COOK ISLANDS					4	
FIJI					4	
FRENCH POLYNESIA					4	
GUAM					4	
JAPAN					3	
KIRIBATI					4	
LAO PDR					3	
MALAYSIA					1	
MARSHALL ISLANDS					4	
MICRONESIA					3	
MONGOLIA					4	
NAURU					4	
NEW CALEDONIA					1	
NEW ZEALAND					4	
NIUE					4	X
NORTHERN MARIANA IS					4	
PALAU					0	
PAPUA NEW GUINEA					3	
PHILIPPINES					4	
REP. KOREA					1	
SAMOA					4	
SINGAPORE					4	
SOLOMON ISLANDS					4	
TOKELAU					1	
TONGA					4	
TUVALU					0	
VANUATU					3	
VIET NAM					4	
WALLIS & FUTUNUA IS					0	

Microscopy (a) Use of smear microscopy for diagnosis
 SCC (b) Short course chemotherapy
 DOT (c) Directly observed therapy
 Outcome monitoring (d) Monitoring of treatment outcomes by cohort analysis
 * See table 1 for definition of categories

	implemented in all units/areas
	implemented in some units/areas
	not implemented
	unknown

Note: responses refer to DOTS units/areas if the country is classified as having implemented DOTS.

Country data for the Western Pacific: notification, detection and DOTS coverage, 2001

Country/Territory	Country information														DOTS										non-DOTS				
	Notified TB				New confirmed*				Estimated TB				Detection rate				DOTS		Notifications				DOTS		Notifications		non-DOTS		
	All cases		New ss+		New confirmed*		New ss+		Estimated TB		All cases		New ss+		Detection rate		DOTS		Notifications		DOTS		Notifications		non-DOTS				
	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	number	rate	
a	b	c/a	b/a	c	d/a	e	f/a	c/a	d/a	e/a	f	b/e	c/f	g	h	i	j/a	k	l	m	n	o	p	q	r	s	t	u	v
American Samoa	70	3	4	2	3	23	34	11	15	13	18	1	54	485	3	99	1	14	34	3	2	100							
Australia	19 338	980	5	228	1	528	8	687	4	64	33	3	100	216	65	95	28	116	53	495	129	44							
Brunei Darussalam	335	216	65	95	28	183	55	82	25	118	116	4	100	362 172	28	188 480	15	29	55	1 567	423	100							
Cambodia	13 441	19 170	143	14 361	107	78 564	585	35 118	261	24	41	4	100	19 170	143	14 361	107	41	90	123 049	24 286	22							
China	1 284 972	485 221	38	212 766	17	1 447 947	113	651 110	51	34	33	3	68	362 172	28	188 480	15	29	55	1 567	423	100							
China, Hong Kong SAR	6 961	7 578	109	1 940	28	5 755	83	2 587	37	132	75	4	100	6 011	86	1 517	22	59	33	1 567	423	100							
China, Macao SAR	449	465	104	157	35	371	83	167	37	125	94	4	100	465	104	157	35	94	42	1 567	423	100							
Cook Islands	20	2	10	2	10	7	34	3	15	29	67	4	100	2	10	2	10	67	100	1 567	423	100							
Fiji	823	183	22	73	9	276	34	124	15	66	59	4	100	183	22	73	9	59	54	1 567	423	100							
French Polynesia	237	62	26			80	34	36	15	78		4	100	62	26					1 567	423	100							
Guam	158	63	40	47	30	133	84	60	38	47	78	4	100	63	40	47	30	78	94	1 567	423	100							
Japan	127 335	35 489	28	11 408	9	44 954	35	20 227	16	79	56	3	46	17 809	14	5 709	4	28	41	17 680	5 699	41							
Kiribati	84	189	225	64	76	71	84	32	38	266	200	4	100	189	225	64	76	200	59	764	8 309	62							
Lao PDR	5 403	2 382	44	1 533	28	8 512	158	3 830	71	28	40	3	75	1 618	30	1 533	28	40	100	764	8 309	62							
Malaysia	22 633	14 830	66	8 309	37	27 119	120	12 149	54	55	68	1	100	3	24	2	16	100	67	14 830	8 309	62							
Marshall Islands	52	56	108	15	29	44	84	20	38	127	75	4	100	56	108	15	29	75	36										
Micronesia	126	95	75	8	6	106	84	48	38	90	17	3	70	95	75	8	6	17	11										
Mongolia	2 559	3 526	138	1 631	64	4 969	194	2 236	87	71	73	4	100	3 526	138	1 631	64	73	68										
Nauru	13	3	24	2	16	4	34	2	15	75	100	4	100	3	24	2	16	100	67										
New Caledonia	220	64	29	34	15	185	84	83	38	35	41	1	100	377	10	68	2	37	36	64	34	71							
New Zealand	3 808	377	10	68	2	409	11	184	5	92	37	4	100	377	10	68	2	37	36										
Niue	2					1	34		15			4	100																
Northern Mariana Is	76	58	76	19	25	64	84	29	38	91	66	4	100	58	76	19	25	66	38										
Palau	20					17	84	7	38			4	100																
Papua New Guinea	4 920	15 897	323	1 122	23	11 602	236	5 209	106	137	22	3	13	3 470	71	462	9	9	24	12 427	660	100							
Philippines	77 131	107 133	139	59 341	77	228 931	297	102 940	133	47	58	4	95	107 133	139	59 341	77	58	58	37 268	11 805	39							
Rep. Korea	47 069	37 268	79	11 805	25	32 787	70	14 721	31	114	80	1	100	22	14	12	8	50	80										
Samoa	159	22	14	12	8	53	34	24	15	42	50	4	100	22	14	12	8	50	80										
Singapore	4 108	1 536	37	357	9	1 874	46	842	20	82	42	4	100	749	18	175	4	21	26	787	182	30							
Solomon Islands	463	292	63	118	25	390	84	176	38	75	67	4	100	292	63	118	25	67	50										
Tokelau	1					34	15					1																	
Tonga	99	11	11	8	8	33	34	15	15	33	53	4	98	11	11	8	8	53	89										
Tuvalu	10					3	34	2	15			4	100																
Vanuatu	202	173	86	56	28	170	84	77	38	102	73	3	40	121	60	46	23	60	51	52	10	20							
Viet Nam	79 175	90 679	115	54 202	68	141 353	179	63 609	80	64	85	4	100	90 679	115	54 202	68	85	76										
Wallis & Futuna Is	15					5	34	2	15																				

* these data are not required by WHO, but are provided by some countries, particularly those in the European Region

Country data for the Western Pacific, cont'd: treatment outcomes for cases registered in 2000 - DOTS and non-DOTS

Country/Territory	New smear-positive cases - DOTS												Retreatment cases - DOTS												New smear-positive cases - non-DOTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	Regist- ered			% cured			% comple- ted			% failed			% trans- ferred			% h			% b			% c+d			Regist- ered			% i			% k			% l			% m			% n			% o			% p			% j			% k+l			Regist- ered			% q			% s			% t			% u			% v			% w			% x			% r			% s+t																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	a	c	e	d	e	f	g	h	b	c+d																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

Country data for the Western Pacific, cont'd: age and sex distribution of smear-positive cases in DOTS areas, 2001 (absolute numbers)

	MALE						FEMALE						ALL								
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+
American Samoa	0	15	9	7	6	6	17	0	13	9	9	2	0	6	0	28	18	16	8	6	23
Australia																					
Brunei Darussalam	29	600	1 302	1 601	1 406	1 403	1 037	25	455	1 033	1 526	1 687	1 428	829	54	1 055	2 335	3 127	3 093	2 831	1 866
Cambodia	1 045	16 972	25 115	22 541	23 075	18 560	20 099	1 250	13 029	15 429	10 496	8 764	6 393	5 712	2 295	30 001	40 544	33 037	31 839	24 953	25 811
China	3	73	91	137	166	151	341	7	79	95	75	45	25	137	10	152	186	212	211	176	478
China, Hong Kong SAR	0	9	17	26	25	11	23	1	5	7	11	10	1	11	1	14	24	37	35	12	34
China, Macao SAR							2														2
Cook Islands	0	6	8	11	7	4	2	0	7	5	7	1	2	2	0	13	13	18	8	6	4
Fiji	2	5	1	2	4	4	5	3	7	1	1	3	4	3	5	12	2	3	7	8	8
French Polynesia	0	1	4	10	9	3	6	0	2	3	3	4	2	1	0	3	7	13	13	5	7
Guam	2	115	279	324	648	791	1 876	3	99	206	115	148	162	941	5	214	485	439	796	953	2 817
Japan	4	10	7	3	3	5	3	4	7	7	3	3	4	1	8	17	14	6	6	9	4
Kiribati	8	79	136	172	215	182	161	6	51	97	119	134	102	66	14	130	233	291	349	284	227
Lao PDR	48	713	1 198	1 221	1 011	934	738	36	510	506	445	374	353	222	84	1 223	1 704	1 666	1 385	1 287	960
Malaysia																					
Marshall Islands	3	8	4	2	4	2	0	5	6	4	7	8	2	1	8	14	8	9	12	4	1
Micronesia	0	2	0	0	2	1	0	1	0	1	0	0	1	0	1	2	1	0	2	2	0
Mongolia	13	236	269	179	86	45	36	25	253	260	125	48	28	29	38	489	529	304	134	73	65
Nauru				1	1							1					1	1	1		
New Caledonia																					
New Zealand	1	7	2	7	4	2	12	3	9	14	3	1	3	5	4	16	16	10	5	5	17
Niue																					
Northern Mariana Is	0	1	3	0	4	2	0	0	5	4	0	0	0	0	0	6	7	0	4	2	0
Palau																					
Papua New Guinea	4	101	72	29	26	9	4	7	91	64	32	17	5	1	11	192	136	61	43	14	5
Philippines																					
Rep. Korea																					
Samoa	1	3	1	1	0	0	1	0	1	1	2	1	1	1	1	4	2	3	1	1	2
Singapore	0	5	7	26	42	33	27	0	3	2	11	7	4	8	0	8	9	37	49	37	35
Solomon Islands																					
Tokelau																					
Tonga	0	0	1	0	0	2	1	0	0	2	1	1	0	0	0	0	3	1	1	2	1
Tuvalu																					
Vanuatu	0	8	4	3	8	3	0	1	6	3	2	2	5	0	1	14	7	5	10	8	0
Viet Nam	39	2 756	6 319	8 457	7 054	5 205	7 643	48	1 390	2 357	2 656	2 574	2 530	5 174	87	4 146	8 676	11 113	9 628	7 735	12 817
Wallis & Futuna Is																					
Regional total	1 202	21 725	34 850	34 760	33 805	27 358	32 034	1 425	16 028	20 110	15 649	13 835	11 055	13 150	2 627	37 753	54 960	50 409	47 640	38 413	45 184

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for the Western Pacific, cont'd: age and sex distribution of smear-positive cases in non-DOTS areas, 2001 (absolute numbers)

	MALE							FEMALE							ALL						
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+
American Samoa																					
Australia	1	8	11	11	12	7	18	1	8	18	7	5	8	14	2	16	29	18	17	15	32
Brunei Darussalam																					
Cambodia																					
China	168	2 149	3 405	3 003	2 684	2 229	2 700	155	1 471	2 017	1 545	1 199	782	779	323	3 620	5 422	4 548	3 883	3 011	3 479
China, Hong Kong SAR	3	6	9	25	30	49	177	6	9	24	8	13	9	60	9	15	33	33	43	58	237
China, Macao SAR																					
Cook Islands																					
Fiji																					
French Polynesia																					
Guam																					
Japan	1	105	297	308	671	722	1 964	2	76	231	113	102	168	939	3	181	528	421	773	890	2 903
Kiribati																					
Lao PDR																					
Malaysia																					
Marshall Islands																					
Micronesia																					
Mongolia																					
Nauru																					
New Caledonia	0	1	8	1	5	6	6	1	1	2	1	0	0	3	1	2	10	2	5	6	9
New Zealand																					
Niue																					
Northern Mariana Is																					
Palau																					
Papua New Guinea																					
Philippines																					
Rep. Korea	23	942	1 415	1 419	1 293	1 103	1 361	45	839	890	489	326	390	1 270	68	1 781	2 305	1 908	1 619	1 493	2 631
Samoa																					
Singapore	1	1	12	13	28	33	49	1	2	5	8	8	5	16	2	3	17	21	36	38	65
Solomon Islands																					
Tokelau																					
Tonga																					
Tuvalu																					
Vanuatu																					
Viet Nam																					
Wallis & Futuna Is																					
Regional total	197	3 212	5 158	4 781	4 723	4 150	6 275	211	2 409	3 188	2 174	1 654	1 363	3 081	408	5 621	8 346	6 955	6 377	5 513	9 356

note: the sum of cases notified by age is less than the number of new smear-positive cases notified for some countries

Country data for the Western Pacific, cont'd: smear-positive notification rates by age and sex, 2001

	MALE							FEMALE							ALL						
	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+	0-14	15-24	25-34	35-44	45-54	55-64	65+
American Samoa	0	2	1	1	1	1	3	0	2	2	1	1	1	1	0	2	2	1	1	1	2
Australia																					
Brunei Darussalam																					
Cambodia	1	45	149	245	345	654	794	1	35	116	204	335	453	337	1	40	132	223	339	534	496
China	1	18	23	25	33	45	55	1	15	15	13	13	16	13	1	17	19	19	23	31	33
China, Hong Kong SAR	1	16	17	23	37	71	147	2	18	21	12	12	14	49	2	17	19	17	25	45	95
China, Macao SAR	0	28	57	61	67	75	167	2	16	19	22	31	8	57	1	22	36	40	50	45	102
Cook Islands																					
Fiji	0	7	13	20	18	18	15	0	9	8	13	3	9	13	0	8	11	16	10	13	14
French Polynesia	5	22	5	11	33	53	99	9	32	5	6	28	60	55	7	26	5	9	30	56	76
Guam	0	9	36	84	96	57	133	0	17	30	29	49	44	22	0	13	33	58	74	51	78
Japan	0	3	6	8	14	18	41	0	2	5	3	3	4	14	0	3	5	5	8	11	25
Kiribati																					
Lao PDR	1	15	36	65	128	177	183	1	10	26	43	75	85	65	1	12	31	54	101	127	120
Malaysia	1	33	70	81	94	152	168	1	24	30	30	35	58	43	1	29	50	56	65	106	100
Marshall Islands																					
Micronesia																					
Mongolia	3	85	122	109	108	86	86	6	93	120	74	58	52	53	4	89	121	91	82	69	67
Nauru																					
New Caledonia	0	5	43	6	42	76	106	3	6	11	6	0	0	48	2	5	27	6	22	40	76
New Zealand	0	3	1	2	2	1	6	1	4	5	1	0	2	2	0	3	3	2	1	1	4
Niue																					
Northern Mariana Is																					
Palau																					
Papua New Guinea	0	19	18	10	15	9	7	1	20	18	12	10	5	2	1	19	18	11	13	7	4
Philippines																					
Rep. Korea	0	24	32	34	46	58	101	1	23	21	12	12	19	60	1	24	27	23	29	38	76
Samoa	3	16	8	14	0	0	31	0	6	11	37	22	27	24	2	11	9	24	11	14	27
Singapore	0	2	6	10	22	42	55	0	2	2	5	5	6	14	0	2	4	7	14	24	33
Solomon Islands																					
Tokelau																					
Tonga																					
Tuvalu																					
Vanuatu	0	39	36	38	112	96	0	2	47	27	37	45	133	0	1	43	31	37	80	113	0
Viet Nam	0	34	96	166	239	311	389	0	17	35	51	84	142	225	0	26	66	108	160	224	301
Wallis & Futuna Is																					
Regional rate	1	18	25	31	38	50	66	1	15	16	16	17	22	23	1	16	20	23	27	36	42

Rates are missing where data for smear-positive cases are missing, or where age- and sex-specific population data are not available.

Country data for the Western Pacific, cont'd: number of TB cases notified, 1980-2001

Country/territory	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
American Samoa	2	6	6	8	12	5	8	9	13	5	9	3	1	4	4	4	0	6	3	4	3	3
Australia	1 457	1 366	1 270	1 219	1 299	1 088	906	907	954	952	1 016	950	1 011	991	1 057	1 073	0	1 145	899	1 073	1 043	980
Brunei Darussalam	196	285	245	276	256	238	212	189	126	128	143	143	180	160	160	1073	14 857	15 629	16 946	18 891	307	216
Cambodia	2 576	1 980	8 158	7 572	10 241	10 145	10 325	9 106	10 691	7 906	6 501	10 903	16 148	13 270	15 172	14 603	14 857	489 358	418 903	460 169	463 373	19 170
China	7 630	98 654	117 557	151 564	226 899	285 095	251 600	304 639	310 607	375 481	345 000	320 426	344 218	363 804	363 804	515 764	489 358	418 903	457 349	460 169	463 373	485 221
China, Hong Kong SAR	8 065	7 729	7 527	7 301	7 843	7 545	7 432	7 269	7 021	6 704	6 510	6 283	6 545	6 537	6 319	0	6 501	7 072	7 673	7 512	7 578	7 578
China, Macao SAR	1 101	585	233	455	671	571	420	389	320	274	343	329	294	285	285	402	570	575	465	449	449	465
Cook Islands	37	10	19	29	20	36	17	16	20	1	1	8	12	6	4	203	200	0	0	1	3	2
Fiji	210	180	163	185	165	230	199	173	162	218	226	247	240	183	280	203	200	171	166	192	144	183
French Polynesia	76	66	65	78	80	78	85	80	63	73	59	49	83	78	89	86	86	91	105	93	62	62
Guam	55	41	49	48	54	37	41	34	41	75	75	60	60	70	94	44 425	42 122	42 190	44 016	40 800	39 384	35 489
Japan	70 916	65 867	63 940	62 021	61 521	58 567	56 690	56 496	54 357	53 112	51 821	50 612	48 956	48 461	44 425	43 078	42 122	42 190	44 016	40 800	39 384	35 489
Kiribati	146	187	193	127	111	103	129	110	208	121	68	91	100	99	253	253	327	464	276	255	252	189
Lao PDR	7 630	4 706	4 706	4 700	6 528	4 258	1 514	3 468	7 279	2 962	1 826	1 951	994	2 093	1 135	830	1 440	1 923	2 153	2 434	2 234	2 382
Malaysia	11 218	10 970	11 944	11 634	10 577	10 569	10 735	11 068	10 944	10 686	11 702	11 059	11 420	12 285	11 708	11 778	12 691	13 539	14 115	14 908	15 057	14 830
Marshall Islands	6	7	12	15	12	15	37	32	11	7	26	26	52	61	61	59	59	107	123	41	34	56
Micronesia	1 161	1 094	1 340	1 512	1 651	2 992	2 818	2 432	2 541	2 237	1 577	1 611	1 502	1 433	1 730	2 780	3 457	2 987	2 915	3 348	3 109	3 526
Mongolia	0	2	8	0	0	0	8	6	8	0	7	0	0	2	4	172	126	107	123	2	4	3
Nauru	108	128	120	171	144	104	98	74	111	128	143	140	140	149	132	111	127	352	365	83	86	64
New Caledonia	474	448	437	415	404	359	320	296	295	303	348	335	317	274	352	391	352	321	365	447	344	377
New Zealand	1	0	2	3	1	0	5	0	3	0	0	0	2	1	2	0	2	0	0	0	0	0
Niue	26	75	74	58	64	16	16	56	27	28	28	6	67	46	46	48	51	93	97	66	75	58
Northern Mariana Is	17	10	17	14	20	26	13	38	17	3	0	6	4	25	41	19	5	15	32	32	32	32
Palau	2 525	2 508	2 742	2 955	3 505	3 453	2 877	2 251	4 261	3 396	2 497	3 401	2 540	7 451	5 335	8 041	5 097	7 977	11 291	13 067	12 121	15 897
Papua New Guinea	112 307	116 821	104 715	106 300	151 863	151 028	153 129	163 740	183 113	217 272	317 008	207 371	236 172	178 134	180 044	119 186	185 453	195 767	162 360	145 807	119 914	107 133
Philippines	89 803	98 532	100 878	91 572	85 669	87 169	88 789	87 419	74 460	70 012	63 904	57 864	48 070	46 999	38 155	42 117	39 315	33 215	34 661	32 075	21 762	37 268
Rep. Korea	59	49	43	41	37	43	65	29	29	37	44	44	26	49	45	45	31	32	22	31	43	22
Samoa	2 710	2 425	2 179	2 065	2 143	1 952	1 760	1 616	1 666	1 617	1 591	1 841	1 778	1 830	1 677	1 889	1 951	1 977	2 120	1 805	1 728	1 536
Singapore	266	313	324	302	337	377	292	334	372	488	382	309	364	367	332	352	299	318	285	289	302	292
Solomon Islands	0	1	0	0	0	2	0	9	1	0	1	1	1	1	0	2	0	0	0	0	0	0
Tokelau	64	49	45	50	54	49	35	24	14	36	23	20	29	33	23	20	22	21	30	22	24	11
Tonga	33	18	12	23	9	32	27	22	24	26	23	30	30	28	19	36	36	36	18	18	18	11
Tuvalu	178	92	173	196	188	124	131	90	118	144	140	230	193	114	152	79	126	184	178	120	152	173
Vanuatu	43 062	43 506	51 206	43 185	43 875	46 941	47 557	55 505	52 463	52 270	50 203	59 784	56 594	52 994	51 763	55 739	74 711	77 638	87 468	88 879	89 792	90 679
Viet Nam	23	24	5	17	14	14	34	34	1	30	22	22	4	11	11	6	8	14	14	14	14	14
Wallis & Futuna Is	356 482	355 345	461 572	462 193	541 001	615 179	651 853	655 019	716 450	741 916	893 992	760 870	754 466	718 693	724 380	818 764	839 344	822 734	846 159	833 086	798 434	824 023
Total	33	33	36	36	36	36	35	36	36	35	32	31	35	32	33	28	31	30	29	31	33	33
number reporting	92	92	100	100	100	100	97	100	100	97	89	86	97	89	92	78	86	83	81	86	92	92
percent reporting																						

Country data for the Western Pacific, cont'd: case notification rates, 1980-2001

Country/territory	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
American Samoa	6	18	17	22	32	13	20	21	30	11	19	6	2	8	7		0	10	5	6	4	4
Australia	10	9	8	8	8	7	6	6	6	6	6	6	6	6	6	6		6	5	6	5	5
Brunei Darussalam	102	143	120	131	118	107	92	80	52	51	56		66	57				52		85	94	65
Cambodia	39	29	117	103	133	126	124	105	119	85	68	109	156	124	137	128	127	129	136	151	144	143
China			10	11	14	21	24	23	27	27	33	29	27	29	30	42	38	34	36	36	36	38
China, Hong Kong SAR	160	150	144	137	145	138	135	131	126	119	114	109	111	109	104	0	103	109	116	111	110	109
China, Macao SAR	437	226	87	163	229	186	131	117	92	76	92	86	75	71		97	135	134	107		101	104
Cook Islands	207	56	108	165	114	204	96	90	111	6	5	43	65	32	21		0	0	5	15	10	10
Fiji	33	28	24	27	24	32	28	24	23	30	31	34	33	24	37	26	26	22	21	24	18	22
French Polynesia	50	42	41	47	47	45	48	44	34	38	30	25	41	38	42		39	41	46	41	27	26
Guam	52	38	44	42	46	31	40	27	32	57			43	50	66					35	40	
Japan	61	56	54	52	51	48	47	46	44	43	42	41	39	39	36	34	33	33	35	32	31	28
Kiribati	239	301	305	197	169	154	190	160	298	171	95	125	135	132	332		417	584	342	312	304	225
Lao PDR	238	141	137	185	118	41	91	91	186	73	44	46	23	47	25	18	30	39	43	47	42	44
Malaysia	82	78	82	78	69	67	67	67	65	61	66	60	61	64	60	59	62	65	66	68	68	66
Marshall Islands	19	22	36	43	33	39	94	78	26	16		57	113	131			122		99	81	66	108
Micronesia		88	93	93	93	80	70	112	86	74	388	361	111	148	165	160	114	94	106		74	75
Mongolia	70	64	76	84	89	157	143	120	121	104	71	71	65	61	73	115	142	121	117	133	123	138
Nauru	0	27	105	0	0	0	95	70	90	0	74				38					17	33	24
New Caledonia	76	88	81	114	94	67	62	46	68	76	84	80	78	81	70	57	64			39	40	29
New Zealand	15	14	14	13	13	11	10	9	9	9	10	10	9	8	10	11	10	9	10	12	9	10
Niue	29	0	66	106	38	0	206	0	128	0	0		89	45	92	0	95	0	0	49	0	0
Northern Mariana Is	158	463	458	458	340	333	70	200	80	71	64		132		83	83	84	146	145	95	103	76
Palau	139	80	133	107	149	190	93	266	117	20		39	25	153	245	111	28	84		171		
Papua New Guinea	86	83	88	93	108	104	84	64	119	93	66	88	64	183	128	188	116	178	246	278	252	323
Philippines	234	237	207	206	287	278	276	288	314	364	519	332	369	272	269	174	237	275	223	197	159	139
Rep. Korea	236	255	257	230	212	214	215	210	177	165	149	134	110	106	86	94	87	73	75	69	47	79
Samoa	38	32	28	26	24	27	41	18	18	23	27	27	16	31	28	28	20	20	14	20	27	14
Singapore	112	98	86	80	81	72	64	57	58	55	53	59	56	56	50	54	54	53	56	46	43	37
Solomon Islands	116	132	132	119	128	139	104	115	124	158	120	94	107	104	91	93	77	79	71	67	67	63
Tokelau	0	63	0	0	0	120	0	545	61	0	62	63	64		0	131	0		0	0	0	0
Tonga	70	53	49	54	58	52	37	25	15	38	24	21	30	34	24	21	23	21	31	22	24	11
Tuvalu	441	235	154	291	112	393	327	262	281	300	261	336	331	304	203	380		182				
Vanuatu	152	77	141	156	146	94	97	65	83	99	94	150	122	70	91	46	71	101	95	63	77	86
Viet Nam	81	80	93	76	76	79	79	90	83	81	76	89	82	75	72	77	101	104	115	115	115	115
Wallis & Futuna Is	208	209	42	139	112	109		257	7	221		160	29	79	79	43	57	98				
Regional rate	27	27	34	34	39	44	46	45	49	50	59	49	48	46	46	51	52	50	51	50	47	48

Country data for the Western Pacific, cont'd: new smear-positive cases, 1993-2001

Country/territory	Number of cases										Rate (per 100 000 population)									
	1993	1994	1995	1996	1997	1998	1999	2000	2001		1993	1994	1995	1996	1997	1998	1999	2000	2001	
American Samoa	1	4		0	6	2	3	2	2		2	7		0	10	3	5	3	3	
Australia	557				226	203	285	251	228		3				1	1	2	1	1	
Brunei Darussalam	68				0		102	84	95		24				0		32	26	28	
Cambodia		11 058	11 101	12 065	12 686	13 865	15 744	14 822	14 361			100	97	103	105	112	123	113	107	
China	84 898	104 729	134 488	168 270	188 530	214 462	212 426	213 766	212 766		7	9	11	14	15	17	17	17	17	
China, Hong Kong SAR	2 429		1 677	1 774	1 943	2 091	2 020	1 940	1 940		41		27	28	30	32	30	28	28	
China, Macao SAR	108		141	258	325	276		160	157		27		34	61	76	64		36	35	
Cook Islands	4	1		0	0	1	0	0	2		21	5		0	0	5	0	0	10	
Fiji	58	60	68	69	66	74	65	62	73		8	8	9	9	8	9	8	8	9	
French Polynesia		38		37	41	34	33	29	0			18		17	18	15	14	12	0	
Guam		40						43	47		28							28	30	
Japan	17 890	16 770	14 367	12 867	13 571	11 935	12 909	11 853	11 408		14	13	11	10	11	9	10	9	9	
Kiribati	99	184		144	50	52	59	54	64		132	242		184	63	64	72	65	76	
Lao PDR			478	886	1 234	1 494	1 719	1 526	1 533				10	18	25	30	33	29	28	
Malaysia	6 954	6 861	6 688	7 271	7 496	7 802	8 207	8 156	8 309		36	35	33	36	36	37	38	37	37	
Marshall Islands	12			12	11	11	17	11	15		26			25	22	22	34	22	29	
Micronesia			9	14	9	14		15	8				8	13	8	12	12	12	6	
Mongolia	86	145	455	769	1 171	1 356	1 513	1 389	1 631		4	6	19	32	48	55	60	55	64	
Nauru		2					2	4	2			19					17	33	16	
New Caledonia		42	33	35			30	38	34			22	17	18			14	18	15	
New Zealand	91	61	78	90	83	106	94	74	68		3	2	2	2	2	3	3	2	2	
Niue	0	0	0	1	0	0	1	0	0		0	0	0	47	0	0	49	0	0	
Northern Mariana Is			14	26	21	26	15	27	19				24	43	33	39	22	37	25	
Palau	8	11	9	4	7		20				49	66	52	23	39	107				
Papua New Guinea			1 652	652	1 195	2 107	1 914	2 267	1 122				39	15	27	46	41	47	23	
Philippines	92 279	87 401	94 768	86 695	80 163	69 476	73 373	67 056	59 341		141	131	139	124	112	96	99	89	77	
Rep. Korea	16 630	13 286	11 754	11 420	9 957	10 359	9 559	8 216	11 805		38	30	26	25	22	22	21	18	25	
Samoa	21	18	15	9	14	7	17	13	12		13	11	9	6	9	4	11	8	8	
Singapore	513	861	455	519	436	482	465	248	357		16	26	13	14	12	13	12	6	9	
Solomon Islands	155	114	109	90	113	140	93	109	118		44	31	29	23	28	34	22	24	25	
Tokelau			1	0	0		0	0	0			0	66	0			0	0	0	
Tonga	16	17	9	14	11	16	10	15	8		17	18	9	14	11	16	10	15	8	
Tuvalu	2	1	6								22	11	63							
Vanuatu		62	30	50	66	38	43	63	56			37	17	28	36	20	22	32	28	
Viet Nam			37 550	48 911	50 016	54 889	53 805	53 169	54 202				52	66	67	72	70	68	68	
Wallis & Futuna Is			3	3	1								21	21	7					
Total	222 879	241 746	315 958	352 955	369 437	391 318	394 543	385 462	379 783		14	15	20	22	23	24	24	23	22	

Notes

CHINA Data are not routinely collected from prisons and the military.

JAPAN Data are not routinely collected from prisons. Treatment outcomes exclude cases receiving regimens that do not include rifampicin and INH, and patients who transferred out. Some outcome definitions do not match WHO definitions.

LAO PDR Data are not routinely collected from prisons. Cohort for treatment outcome analysis excludes 72 notified patients who did not start treatment. 100% coverage expected by end of 2002 (last 2 provinces and 32 districts).

MALAYSIA A treatment outcome monitoring system was implemented in 2002.

NEW CALEDONIA Outcomes for 2000 cohort are for smear-positive and culture-positive patients (mixed).

NEW ZEALAND 2001 notifications also provided according to lab-confirmation (i.e., by smear, culture or DNA): 157 new pulmonary confirmed; 30 new pulmonary unconfirmed; 95 new extrapulmonary confirmed; 13 new extrapulmonary unconfirmed; 19 relapse confirmed; 3 relapse unconfirmed.

PAPUA NEW GUINEA For non-DOTS areas, notifications provided for new smear-positives and total only.

PHILIPPINES Data are not routinely collected from prisons, the military, and the department of education. The 5 379 cases notified as relapse include some retreatment after failure.

REP. KOREA Implementation of an internet-based surveillance system in mid-2000 made it easier for private medical institutions to notify TB cases. Treatment outcomes are based on patients registered at public health centres from July 1 to December 31.

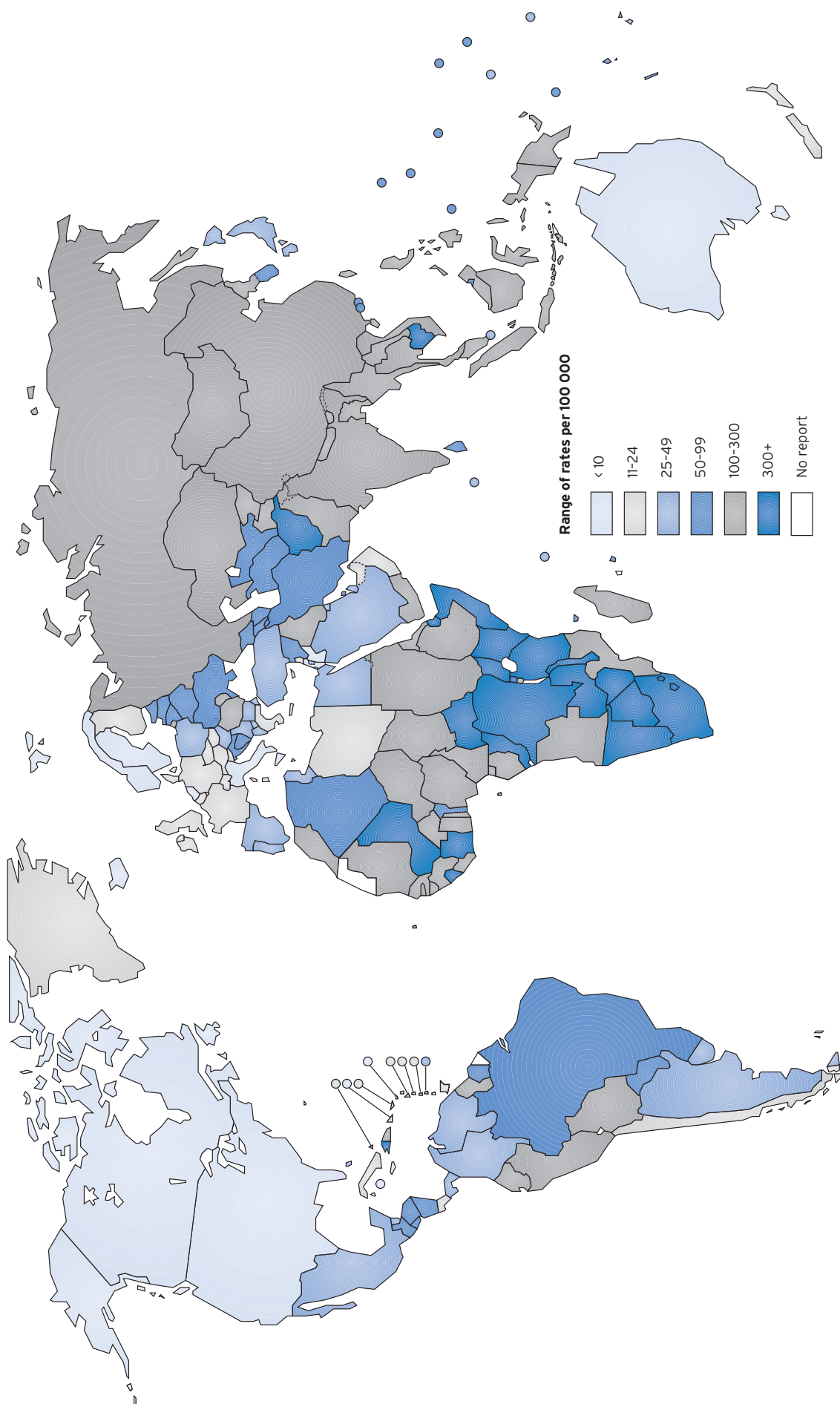
SINGAPORE Data do not include non-residents.

ANNEX 5

World maps

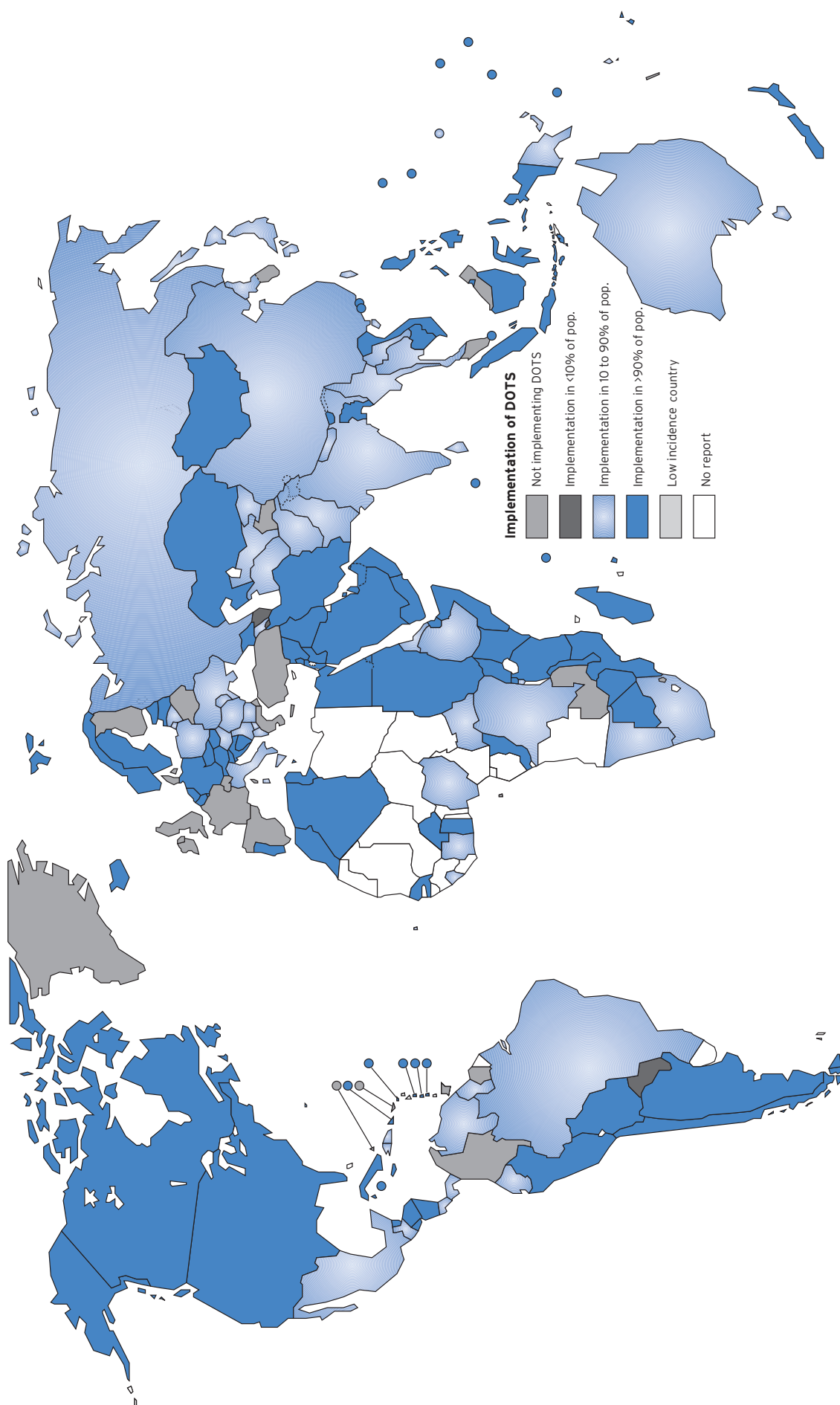
1. ESTIMATED TB INCIDENCE RATES, 2001
2. IMPLEMENTATION OF DOTS, 2001
3. TUBERCULOSIS NOTIFICATION RATES, 2001

1. ESTIMATED TB INCIDENCE RATES, 2001



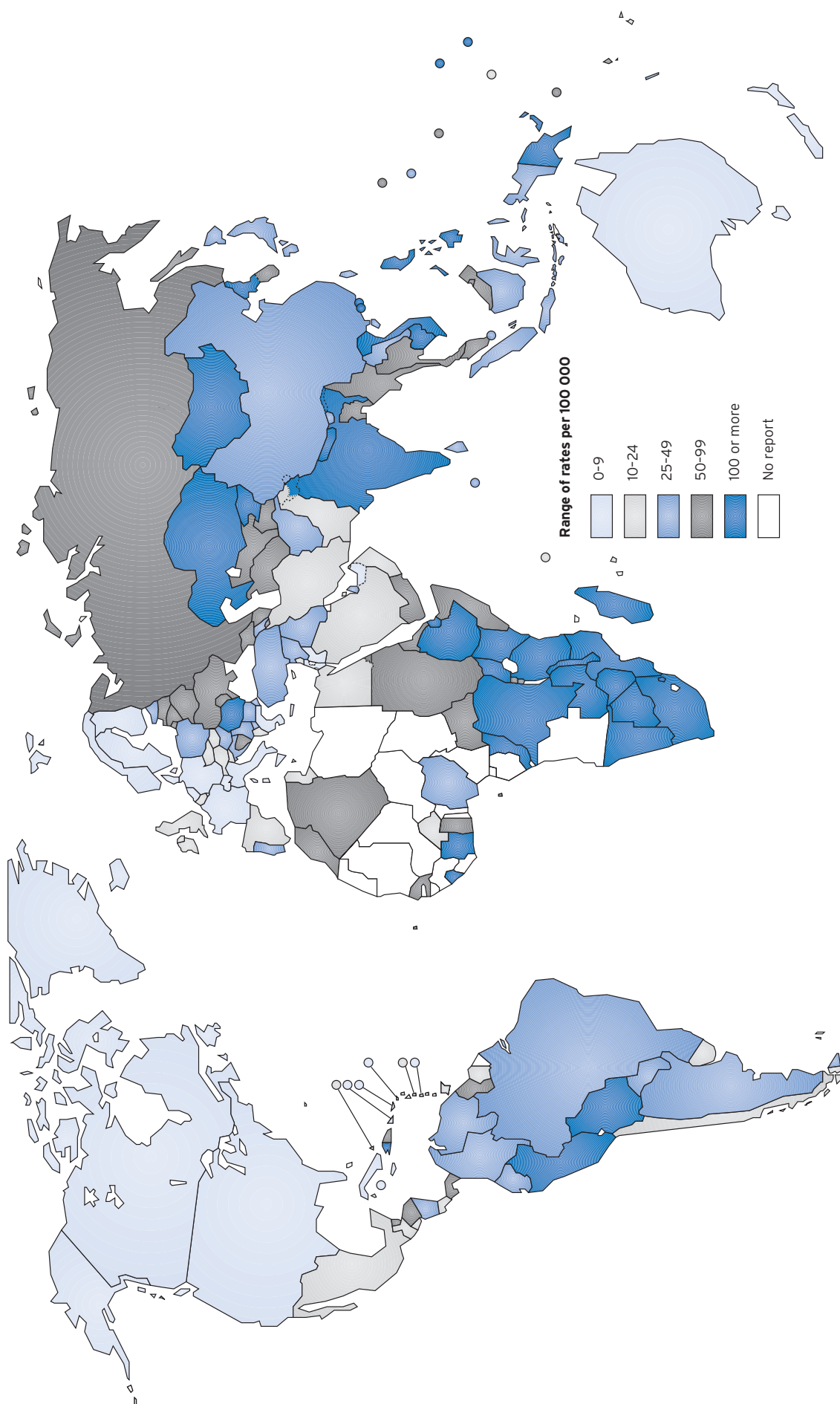
The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dashed lines represent approximate border lines for which there may not yet be full agreement.

2. IMPLEMENTATION OF DOTS, 2001



The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dashed lines represent approximate border lines for which there may not yet be full agreement.

3. TUBERCULOSIS NOTIFICATION RATES, 2001



The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dashed lines represent approximate border lines for which there may not yet be full agreement.

ANNEX 6

Comparison of cases notified and registered for treatment in 2000

Comparison of smear-positive cases notified in 2000 and registered for treatment in 2000

	Number of cases		% of notified
	notified	registered	
Afghanistan		3 136	108
Albania	171		
Algeria	7 845	7 622	100
American Samoa	3	3	
Andorra	4	3	200
Angola	7 379		
Anguilla			
Antigua and Barbuda	3	4	133
Argentina	4 749	5 177	109
Armenia	621	447	72
Australia	251	238	95
Austria	324	298	92
Azerbaijan	890	890	100
Bahamas	56		
Bahrain	94	22	23
Bangladesh	38 484	38 484	100
Barbados	3		
Belarus	2 547		
Belgium	409		
Belize	44	45	102
Benin	2 286		
Bermuda	0		
Bhutan	347	347	100
Bolivia	6 458	6 212	96
Bosnia & Herzegovina	759	756	100
Botswana	3 091	3 991	129
Brazil	41 186	34 007	83
British Virgin Islands			
Brunei Darussalam	84	84	100
Bulgaria	2 524		
Burkina Faso	1 560	1 574	101
Burundi		3 465	120
Cambodia	14 822	14 775	100
Cameroon	3 960		
Canada	506	225	44
Cape Verde			
Cayman Islands	5		
Central African Republic		1 366	47
Chad			
Chile	1 290	1 360	105
China	213 766	213 766	100
China, Hong Kong SAR	1 940	1 940	100
China, Macao SAR	160	160	100
Colombia	8 358		
Comoros	87		
Congo	4 218	3 114	74
Cook Islands	0		
Costa Rica	349	349	100
Côte d'Ivoire	8 497		
Croatia	0		
Cuba	677	673	99
Cyprus	4		
Czech Republic	420	396	94
Denmark	171		
Djibouti	1 391	1 391	100
Dominica			
Dominican Republic	2 907	2 760	95
DPR Korea	16 440	14 571	89
DR Congo	36 123	36 123	100
Ecuador	5 064		
Egypt	4 606	4 611	100
El Salvador	1 008	1 008	100
Equatorial Guinea			
Eritrea	590	765	130
Estonia	255	257	101
Ethiopia	30 510	29 662	97
Fiji	62	62	100
Finland	205		
France	1 815		
French Polynesia	29	62	214
Gabon			
Gambia			
Georgia	601	807	134
Germany	0	454	
Ghana	7 316	7 316	100
Greece	235		
Grenada	0		
Guam	43	43	100
Guatemala	2 052	1 908	93
Guinea	3 920		
Guinea-Bissau	526		
Guyana	119	119	100
Haiti	5 887	5 887	100
Honduras	2 415	2 362	98
Hungary	412	651	158
Iceland	1		
India	349 374	156 993	45
Indonesia	52 338	52 338	100
Iran	5 866	5 866	100
Iraq	3 194	3 194	100
Ireland	138		
Israel	17		
Italy	687	223	32
Jamaica	90	99	110
Japan	11 853	10 348	87
Jordan	89	89	100
Kazakhstan	8 903	8 781	99
Kenya	28 773	28 376	99
Kiribati	54	54	100
Kuwait			
Kyrgyzstan	1 296	1 233	95
Lao PDR	1 526	1 454	95
Latvia	637	637	100
Lebanon	202	190	94
Lesotho	3 041		
Liberia			
Libyan Arab Jamahiriya	607		
Lithuania	776	776	100

continued...

Comparison of smear-positive cases notified in 2000 and registered for treatment in 2000, cont.

	Number of cases		% of notif registered
	notified	registered	
Luxembourg	21		
Madagascar		10 506	363
Malawi	8 296	8 296	100
Malaysia	8 156		
Maldives	65	65	100
Mali	2 527		
Malta	5	4	80
Marshall Islands	11	11	100
Mauritania	1 583		
Mauritius	115	160	139
Mexico	11 676	11 538	99
Micronesia	15	14	93
Monaco	0		
Mongolia	1 389	1 389	100
Montserrat	0		
Morocco	12 872	12 872	100
Mozambique	13 257	13 296	100
Myanmar	17 254	16 792	97
Namibia	3 911	4 013	103
Nauru	4	4	100
Nepal	13 683	12 992	95
Netherlands	289	301	104
Netherlands Antilles			
New Caledonia	38		
New Zealand	74	73	99
Nicaragua	1 471	1 437	98
Niger	2 693		
Nigeria	17 423	16 372	94
Niue	0		
Northern Mariana Is	27	27	100
Norway	37	37	100
Oman	164	112	68
Pakistan	3 285	4 074	124
Palau			
Panama	410	460	112
Papua New Guinea	2 267	422	19
Paraguay	900	900	100
Peru	22 580	22 230	98
Philippines	67 056	50 196	75
Poland	3 180	214	7
Portugal	1 863	1 924	103
Puerto Rico	82	68	83
Qatar	53	53	100
Rep. Korea	8 216		
Republic of Moldova	651	651	100
Romania	10 202	10 158	100
Russian Federation	27 467	3 616	13
Rwanda	3 681	3 775	103
Saint Kitts and Nevis	0		
Saint Lucia	7	8	114
Samoa	13	13	100
San Marino	1	1	100
Sao Tome and Principe	30		
Saudi Arabia	1 595	1 285	81
Senegal		5 823	201
Seychelles	11	11	100
Sierra Leone	2 472	2 296	93
Singapore	248	242	98
Slovakia	236	238	101
Slovenia	145	145	100
Solomon Islands	109	109	100
Somalia	3 776	3 776	100
South Africa	75 967	86 276	114
Spain	3 423		
Sri Lanka	4 314	4 314	100
St Vincent & Grenadines	9	13	144
Sudan	12 311	14 599	119
Suriname	37		
Swaziland	1 823		
Sweden	118	112	95
Switzerland	118		
Syrian Arab Republic	1 584	1 562	99
Tajikistan	434		
TFYR Macedonia	167	152	91
Thailand	17 754	23 061	130
Togo	984		
Tokelau	0		
Tonga	15	15	100
Trinidad and Tobago	115		
Tunisia	1 099	1 099	100
Turkey	4 315		
Turkmenistan	1 017	1 017	100
Turks & Caicos Islands			
Tuvalu			
Uganda	17 246	13 874	80
Ukraine	10 738		
United Arab Emirates	73	73	100
United Kingdom	1 204		
UR Tanzania	24 049	23 923	99
Uruguay	348	344	99
US Virgin Islands			
USA	5 865	5 802	99
Uzbekistan	3 825	1 030	27
Vanuatu	63	26	41
Venezuela	3 525	3 390	96
Viet Nam	53 169	53 169	100
Wallis & Futuna Is			
West Bank and Gaza			
Yemen	5 565	5 565	100
Yugoslavia	0		
Zambia	12 927		
Zimbabwe	14 392	14 392	100

ANNEX 7

Trends in treatment success and DOTS detection rates, 1994-2001

DOTS treatment success and detection rates reported during 1995-2001

	DOTS treatment success (%)							DOTS detection rate (%)						
	1994	1995	1996	1997	1998	1999	2000	1995	1996	1997	1998	1999	2000	2001
Afghanistan				45	33	87	86			2	6	5	9	15
Albania														20
Algeria			86			87	87			135			125	114
American Samoa		100			50	100			0	59		29	19	
Andorra					100	67	50			197	12	34	12	34
Angola			15	68						66	44	76		
Anguilla														
Antigua and Barbuda					50	50	100					49	153	52
Argentina					55	59	55			4	7	20	31	39
Armenia		83	77	82	81	88	87	9	21	36	37	34	37	22
Australia				66	75	84	74				17	23	18	14
Austria						77	73						56	46
Azerbaijan			86	87	86	88	91	5	9	7	7	7	6	0
Bahamas					72	66						64	97	
Bahrain					13	95	73					62	15	59
Bangladesh	73	71	72	78	80	81	83	7	14	18	23	24	25	26
Barbados														30
Belarus														
Belgium														75
Belize		52				88	78		43	106			102	126
Benin	76	73	72	74	77	77		84	84	86	87	95	98	
Bermuda														
Bhutan	71	97	96	85	91	85	90	28	24	22	21	25	28	26
Bolivia	66	62	71	77	62	74	79	38	77	73	78	78	77	81
Bosnia & Herzegovina				93	88	90	94				38	64	65	71
Botswana	72	67	70	71	47	71	77	78	89	83	88	82	82	75
Brazil					92	89	73				4	4	8	8
British Virgin Islands									0					
Brunei Darussalam					85	76	63					126	103	116
Bulgaria													31	15
Burkina Faso		25	29	61	59	61	60	12	21	16	17	17	17	15
Burundi	44	45		68	74		80	19	24	31	20	42		39
Cambodia	84	91	94	91	95	93	91	42	35	44	45	49	44	41
Cameroon				80	75	75			5		12	23	39	
Canada					35	79	80					50	56	56
Cape Verde														40
Cayman Islands														129
Central African Republic		37					57		65					8
Chad	63	47			64			35	14			40		
Chile	83	79	80	77	83	83	82	73	72	80	90	92	86	97
China	94	96	96	96	97	96	95	15	22	24	30	29	30	29
China, Hong Kong SAR					85	79	76					60	58	59
China, Macao SAR	75			81		78	89	79	115	173	130		95	94
Colombia					74	82					73	30	34	
Comoros	94	90		85		93		59	61		50		44	
Congo	69					61	69	69			59		109	104
Cook Islands				50		80			0	0	32	0	0	67
Costa Rica						81	76					31	150	89
Côte d'Ivoire	17	68	56	61	62	63		51	52	50	51	49	39	10
Croatia														36
Cuba	86	90	92	90	94	91	93	83	89	87	91	95	96	85
Cyprus					42						26	87		
Czech Republic	73	60	66	69	65	78	70	46	59	53	65	58	58	59
Denmark														
Djibouti		76	77	76	79	72	62		95	99	86	79	69	65
Dominica			100							91	56			
Dominican Republic						81	79					8	5	7
DPR Korea					91	94	91					2	27	56
DR Congo	72	80	48	64	70	69	78	39	46	46	58	57	56	61
Ecuador														5

continued...

DOTS treatment success and detection rates reported during 1995-2001, cont'd

	DOTS treatment success (%)							DOTS detection rate (%)						
	1994	1995	1996	1997	1998	1999	2000	1995	1996	1997	1998	1999	2000	2001
Egypt	52		81	82	87	87	87	38	0	9	14	25	36	39
El Salvador					77	78	80			45	52	56	56	58
Equatorial Guinea	89	89	77	82				73	66	68	81			
Eritrea				83	73	44	76			3	6	13	14	15
Estonia						63	70						80	67
Ethiopia	74	61	73	72	74	76	80	16	22	25	28	30	41	42
Fiji	90	86		87	90	92	86	51	52	50	57	51	49	59
Finland														
France														
French Polynesia		67	95	100	74	85	97		99	111	93	91	80	0
Gabon														
Gambia	74	76	80	70				85	74	73	73			
Georgia		58		65	78	61	63	16	32		32	41	31	48
Germany				54	54	58	77			63	62	62	0	46
Ghana		54	51	48	59	55	50	16	14	33	34	33	41	45
Greece														
Grenada														
Guam						94	93						72	78
Guatemala	62	61	81	73	79	81	86	43	59	56	55	55	49	39
Guinea	78	78	75	74	73	74		44	52	51	54	54	56	
Guinea-Bissau						35							51	
Guyana						91	91						11	21
Haiti				73	79	70	73			2	12	25	23	31
Honduras					93	88	89				2	15	62	105
Hungary				80			64					37	25	35
Iceland														69
India	83	79	79	82	84	82	84	0	1	1	2	7	12	23
Indonesia	94	91	81	55	58	50	87	1	5	8	12	19	19	21
Iran			87	84	83	82	85	29		7	20	30	32	33
Iraq					83	85	92				2	6	24	26
Ireland														
Israel													6	63
Italy		80	82	69	72	71	74		14	9	13	55	31	10
Jamaica		67	72	79	89	74	46		86	81	91	104	101	84
Japan						76	70						22	28
Jordan	90				92	88	90	73			48	47	42	47
Kazakhstan					79	79	79				4	73	80	69
Kenya	73	75	77	65	77	78	80	55	57	54	58	56	46	47
Kiribati					83	89	91			35	157	185	169	201
Kuwait														
Kyrgyzstan			88	76	82	83	82		2	3	31	58	42	0
Lao PDR		70	55	62	75	84	82		24	34	40	46	40	40
Latvia		61	64	65	71	74	72		62	69	74	67	73	77
Lebanon	89				73	96	92	44				69	60	54
Lesotho	56	47	71	63		69		56	64	75	68		64	
Liberia		79		75					32		46			
Libyan Arab Jamahiriya					68	67						142	107	
Lithuania					79	84	92					3	2	30
Luxembourg														40
Madagascar	51	55		64			70	56	68		66			60
Malawi	22	71	68	71	69	71	73	40	41	44	49	43	42	40
Malaysia		70				90		69	72				70	
Maldives	95	97	93	95	94	94	95	91	94	93	96	107	88	88
Mali	68	59	65	62	70	68		15	17	18	17	16	14	
Malta		100	100	100	100	75	100		35	22	45	69	40	25
Marshall Islands					83	82	91				56	87	56	76
Mauritania														
Mauritius	96				91	87	93	41			32	35	33	24
Mexico			75	65	78	80	76			15	30	40	71	95
Micronesia	64	80				95	93	16	22				32	17

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DOTS treatment success and detection rates reported during 1995-2001, cont'd

	DOTS treatment success (%)							DOTS detection rate (%)						
	1994	1995	1996	1997	1998	1999	2000	1995	1996	1997	1998	1999	2000	2001
Monaco														
Mongolia	59	78	78	86	84	86	87	7	31	31	54	67	62	73
Montserrat														0
Morocco	86	90	88	89	88	88	89	93	93	92	86	86	82	81
Mozambique	67	39	54	67		71	75	63	60	61	65		67	68
Myanmar		66	79	82	82	81	82		25	26	29	33	49	59
Namibia			54	58	60	50	53	22	85	75	92	88	91	98
Nauru						50	25						211	106
Nepal			85	87	89	87	86		6	11	17	47	59	60
Netherlands	81	72	81	80	65	79	76	74	49	45	39	50	50	56
Netherlands Antilles														
New Caledonia	62	75			70			33	33			33		
New Zealand							30						41	37
Nicaragua	81	80	79	81	82	81	83	71	82	84	87	87	87	94
Niger			57	66		61				21	16		33	
Nigeria	65	49	32	73	73	75	79	11	17	12	13	15	15	16
Niue														0
Northern Mariana Is						80	82						97	66
Norway		77	80	44	69	77	70		75	75	38	17	30	50
Oman		84	87	91	86	67	93		78	87	79	87	119	113
Pakistan	74	70		67	66	70	75	1	2		4	2	3	6
Palau	64	67	75					128	56	98				
Panama				51	51	80	67				13	9	46	71
Papua New Guinea		60		93	72	66	63		4	1	8	5	8	9
Paraguay	46	51					77	13	53				4	5
Peru	81	83	89	90	93	93	90	99	88	95	101	95	93	95
Philippines	80		82	83	84	87	88	0	1	3	10	20	49	58
Poland					75	69	72				2	3	4	3
Portugal	48	69	74	78	74	85	79	77	76	66	84	78	83	84
Puerto Rico		65	68	68	68	77	72		65	80	72	79	65	60
Qatar	83	81	72	80	84	74	66	112	79	69	116	94	84	119
Rep. Korea	71	76	71	82				30	61	56	61			
Republic of Moldova							83							37
Romania				72	85	78	80				86	4	10	11
Russian Federation		65	62	68	68	65	68		0	1	1	2	5	5
Rwanda			61	68	72	67	61	34	35	43	59	50	39	32
Saint Kitts and Nevis					25	50					146	51	0	0
Saint Lucia				67	82	89	100			92	103	79	63	55
Samoa	50	80	100		86	94	92	54	37	53		68	53	50
San Marino				100			0		0	103	0	0	112	0
Sao Tome and Principe														
Saudi Arabia					57	66	73					23	39	40
Senegal	35	39	41	52	48		52	57	66	62	66	64		85
Seychelles		89	100	100		91	82		70	82	72		74	77
Sierra Leone	76	69	74	79		75	77	27	40	40	38		38	39
Singapore	88	86				95	85	59	26				13	21
Slovakia	96	64	73	67	85	79	82	79	83	34	39	35	36	38
Slovenia		90	87	82	79	88	84		77	58	63	70	66	68
Solomon Islands		65	73	92	92		81		57	70	85	55	63	67
Somalia		86	84	90	88	88	83		18	24	23	25	27	32
South Africa			69	73	74	60	66			6	22	67	70	72
Spain														
Sri Lanka	77	79	80	77	76	84	77	61	59	70	75	75	69	74
St Vincent & Grenadines				86		100	100				19		60	21
Sudan				70	65	81	79		2	1	30	31	37	35
Suriname										18				
Swaziland														
Sweden							80							54
Switzerland														
Syrian Arab Republic			92	88	88	84	79			5	13	18	27	27

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DOTS treatment success and detection rates reported during 1995-2001, cont'd

	DOTS treatment success (%)							DOTS detection rate (%)						
	1994	1995	1996	1997	1998	1999	2000	1995	1996	1997	1998	1999	2000	2001
Tajikistan							86							51
TFYR Macedonia														
Thailand			78	62	68	77	69		0	5	21	40	47	75
Togo	45	60	65	66	69	76		39	38		35	32	33	
Tokelau														
Tonga	89	75	82	75	94	80	93	53	96	74	100	64	98	53
Trinidad and Tobago														
Tunisia					91	91	91					79	73	73
Turkey														
Turkmenistan							70						18	36
Turks & Caicos Islands					71							131		
Tuvalu														
Uganda			33	40	62	61	63			60	61	59	54	52
Ukraine														0
United Arab Emirates							74						30	29
United Kingdom														
UR Tanzania	80	74	76	77	76	78	79	52	53	52	53	51	48	47
Uruguay	83	68	80	78	84	83	85	76	94	94	84	88	79	78
US Virgin Islands		50							80					
USA		72	71	72	72	76	76		86	85	88	88	88	90
Uzbekistan					78	79	81				0	2	4	8
Vanuatu						88	89					32	34	60
Venezuela	68	74	80	72	81	82	76	74	76	75	79	82	78	68
Viet Nam	91	91	90	85	93	92	92	30	59	78	83	84	84	85
Wallis & Futuna Is														
West Bank and Gaza														
Yemen			76	81		83	75		9	30	36		51	47
Yugoslavia														25
Zambia														
Zimbabwe					70	73	69				53	50	47	47



The global tuberculosis epidemic is growing larger and more dangerous each year. The World Health Organization's programme on Communicable Diseases monitors the epidemic, evaluating surveillance, planning, and financing data in support of national TB control programmes.

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